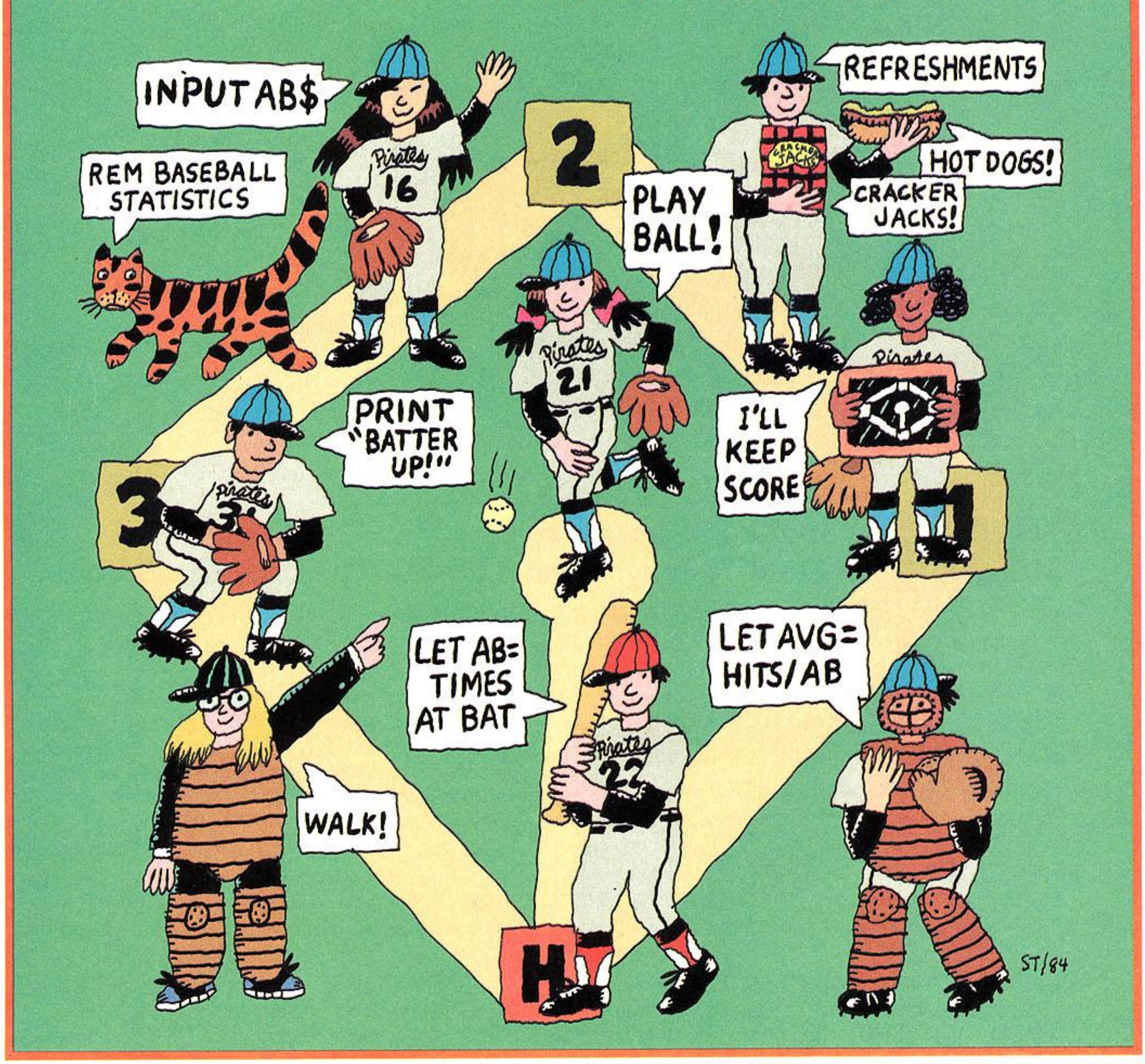
Volume 1, Number 7 $3.50

Scholastic's Magazine for Today's Elementary Classrooms

TEACHING and computers

Published by Scholastic Inc. April 1984

BATTERS UP FOR BASEBALL MATH!


INPUT AB$
REFRESHMENTS
REM BASEBALL STATISTICS
Pirates 16
2
HOT DOGS!
CRACKER JACKS
PLAY BALL!
CRACKER JACKS!
Pirates 21
Pirates
PRINT "BATTER UP!"
I'LL KEEP SCORE
3
Pirates 31
1
LET AB= TIMES AT BAT
LET AVG= HITS/AB
Pirates 22
WALK!
H
ST/84

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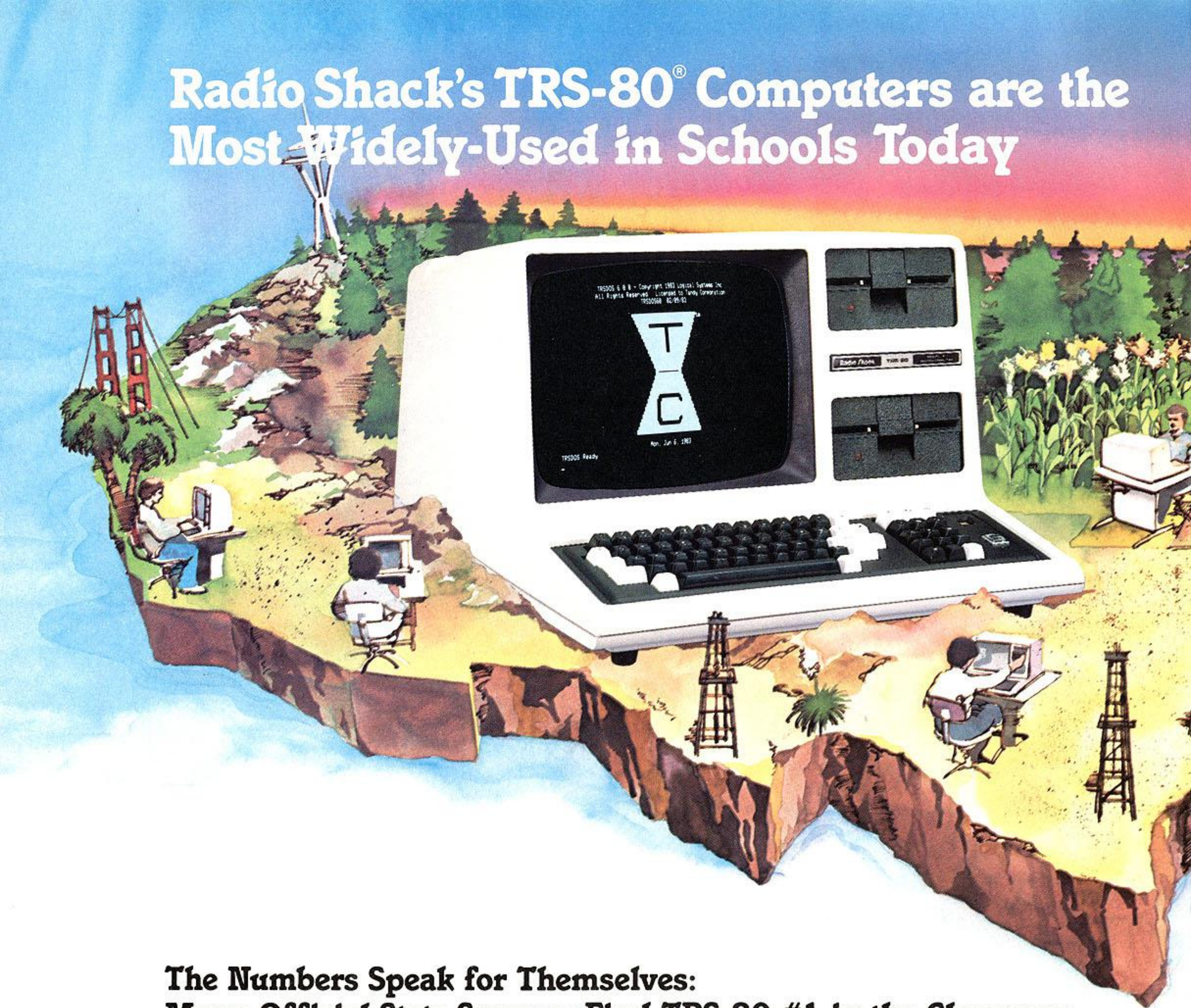
Plus, a Geography Program on Time Zones and a Poster on Robots

Radio Shack's TRS-80® Computers are the Most Widely-Used in Schools Today



The Numbers Speak for Themselves: Many Official State Surveys Find TRS-80 #1 in the Classroom.

Radio Shack's commitment to education is reflected in classrooms across the country. More TRS-80s are found in public schools than any other computer, according to surveys conducted by individual state departments of education. In most of those states reporting, Radio Shack is established as the leader in the educational use of microcomputers.

Louisiana. The 1983 survey shows 780 of 1,373 computers counted in the Louisiana schools are TRS-80 microcomputers. That's 57%. The second-place brand has only a 22% representation.

Florida. The latest survey (1982) shows that more than 45% of the microcomputers in Florida schools are TRS-80s, versus 24% for the second-place brand.

Kentucky. The 1982-83 state survey reveals TRS-80s account for 52% of computers in Kentucky schools, versus 22% for the second-place brand.

Indiana. Radio Shack is number one by the latest survey (1982), in 37.5% of the state's schools. The second-place brand is in 32.4%.

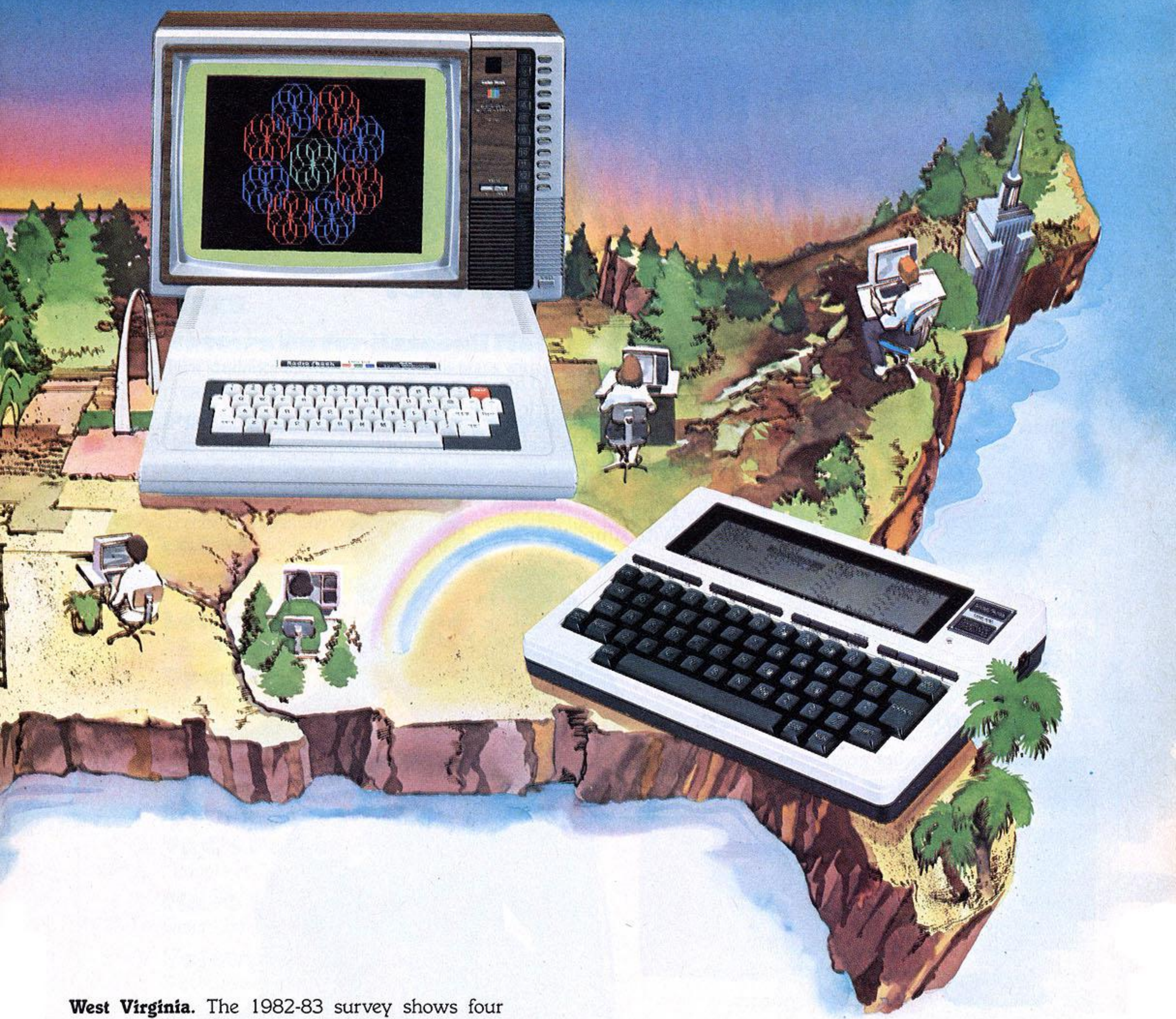
North Carolina. The TRS-80 accounts for 64.2% of the microcomputers in use, versus 35.8% for the second-place brand, as of March 1982.

Oklahoma. A 1982 University of Oklahoma survey yields these percentages on TRS-80s: 59.5% in the elementary schools (versus 24.8% for the second-place brand); 68% for middle schools (versus the second-place brand's 26.5%); and 72.6% for high schools (versus 13.6% for the second-place brand).

Pennsylvania. Figures prepared in late 1981 for the Pennsylvania Department of Education show that TRS-80 purchases were almost twice the volume of all other manufacturers combined.

Texas. A late 1981 survey reports usage of TRS-80s at 58%, versus 40% usage of the second-place brand. Early 1983 survey figures for Region 5 show 59.5% of all microcomputers are TRS-80s compared to 36.4% for the second-place brand.

Washington. In 1981, TRS-80s led in the state with 35.5%, versus 33.7% of the second-place brand.



West Virginia. The 1982-83 survey shows four brands accounted for 83% of the microcomputers in classrooms. TRS-80 computers account for 34.9% compared to 29.8% for the second-place brand.

Montana. The 1982 survey finds usage of TRS-80s at 37.8%, versus 27.4% of the second-place brand.

Idaho. A December 1981 survey finds 59.38% of the state's school microcomputers are TRS-80s compared to 20.2% of the second-place brand.

Connecticut. According to the 1983 survey, Radio Shack leads with 34%, versus 32.9% for the second-place company.

Find out why more schools are choosing the TRS-80. Visit your nearest Radio Shack Computer Center, participating store or dealer. Or contact your Radio Shack Regional Educational Coordinator.

For the name of the full-time Regional Educational Coordinator in your area, call Radio Shack's Education Division at 800-433-5682 toll-free. In Texas, call 800-772-8538.

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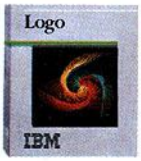
CIRCLE 23 ON READER SERVICE CARD

IBM Logo
The value of making friends with a turtle.



The triangular "turtle" in the IBM Logo computer language is anything but slow. In fact, this little turtle can quickly help students think logically in the abstract.

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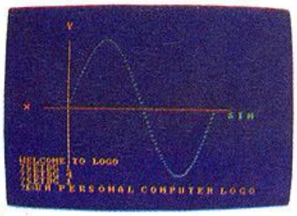
Teachers in higher grades can use IBM Logo during trigonometry and physics lessons.

Students can use it to diagram an atom. Study centrifugal force. Draw the constellation of Sagittarius or print out the flag of Switzerland. And anyone interested in programming can use IBM Logo as preparation for more advanced computer languages.



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CIRCLE 17 ON READER SERVICE CARD

TEACHING and computers

Published by Scholastic Inc.
April 1984 Vol. 1, Issue 7

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Cover Illustration by Simms Taback

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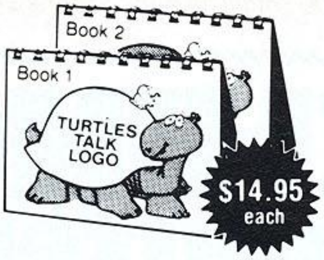

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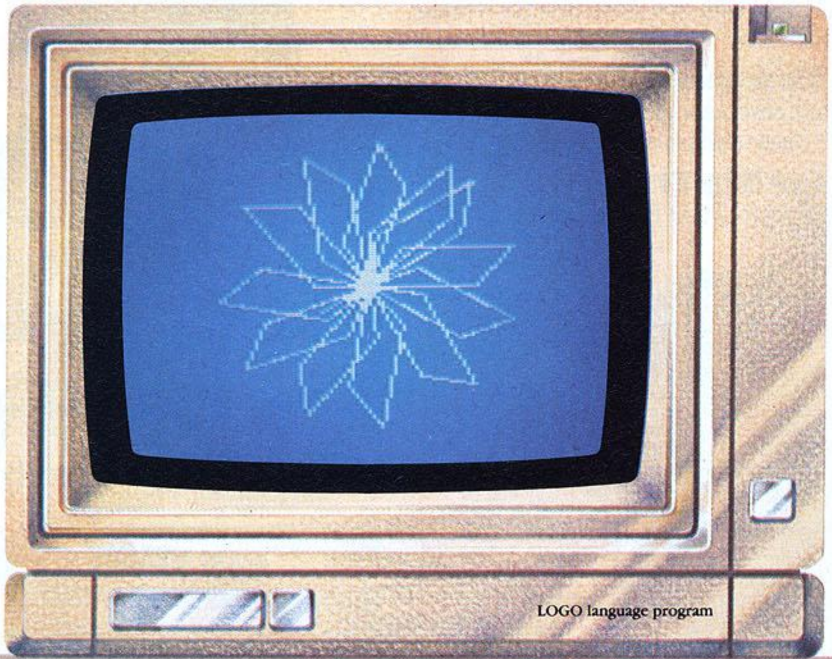

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TEACHING and computers

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FROM THE EDITOR

Swing into Spring

It's Spring. Time to play ball! Assistant editors Lesli Rotenberg and Lorraine Hopping, below, are suited up and ready for action. Lesli and Lorri are part of a Scholastic team that plays other publishing companies.

"Our record was mediocre last year," Lesli says, "but we've been practicing and we're going to be championship material this season!"

Undoubtedly, baseball fever has struck your students by now. If you find that all your kids can think about is fastballs and grand slams, don't despair.

Go to bat for baseball yourself. Follow the game plan in **Batters Up for Baseball Math!**, page 18, and you'll not only capture the interest of the baseball fanatics in your classroom, you'll teach everyone math and programming concepts.

The teaching unit opens with an exciting baseball simulation program. Students play the game several times, keeping track of their hits, times at bat, and games won and lost. They then use these statistics to write BASIC programs that will calculate batting averages and win/loss percentages. What a way to learn!

Assistant editors Lesli Rotenberg and Lorraine Hopping are ready for baseball action.

A great way to learn writing skills is to publish a classroom newspaper. Sixth-graders in Beth Deardorff's class in Orono, Maine, do just that. Every day the students use their word processing skills to produce *Pickering's Daily Express*.

In her article, **Publish a Classroom Newspaper**, page 22, Beth tells how your class can publish an *Express* of its own.

Question: What has six wheels and swings on vines?

Answer: Big Trak of the Jungle.

Question: What do you call a Big Trak without its decals?

Answer: Un-a-Trak-tive.

Big Trak is a programmable tank that children of all ages have become fascinated with. So much so, that it has become the topic of books, songs, and jokes.

Teaching and Computers' contributing editor Shiela Swett bought two Big Traks. "The toys have been great for introducing children to programming," Shiela reports. "Children can program them to move forward, back, left, and right, at varying distances. Big Trak can also be used to develop skills in reading, math, social studies, and science."

In **Get Good Mileage Out of Big Trak**, page 26, Shiela provides you with seven activities in which you can use B.T. to develop basic skills.

"These are just starter activities," Shiela says. "Once you get Big Trak's wheels turning, the possibilities are endless!"

So is the good material in this month's issue. Don't miss **Program of the Month**, page 42. You'll find a fabulous program that investigates time zones. And there's a **"Design a Robot" Contest** on page 31 that could win your class $100 worth of computer equipment!

Mary Dalheim

Editor

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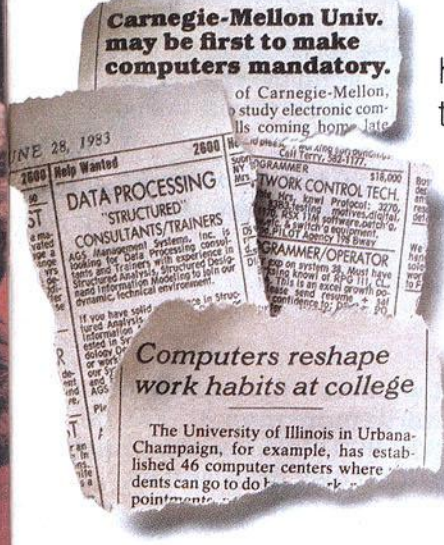

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Computers reshape work habits at college

The University of Illinois in Urbana-Champaign, for example, has established 46 computer centers where dents can go to do

For Home and School—We've just released numerous educational software programs into the public domain. These programs, written by educators, include courses in Business, Computer Science, English, French, Geography, History, Mathematics. The list goes on and on.

We're also working with major educational publishers to develop new software. For example, a significant portion of the well-regarded MECC courseware has been completely adapted for the Commodore 64. The Edufun™ series from Milliken will be available for home and school use in the near future, and over thirty early learning programs from Midwest Software will help children master the basics.

In addition, we've developed a complete set of software tools to make our educational computers even more useful. Take Logo and PILOT, for example. These popular languages have been completely adapted for the Commodore 64.

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CIRCLE 13 ON READER SERVICE CARD

LETTERS

T & C *Readers Respond*

Amphibious Amphibians

In *Animal Kingdom,* (January, Program of the Month, page 46), you classify snakes and lizards as amphibians, but they are reptiles.

Joyce A. Starkey
Tonalea, AZ

Editor's Reply: You are correct in pointing out our misuse of the term *amphibian.* We should have used *amphibious,* which refers to anything that functions both on land and in water, including animals, plants, and amphibious vehicles.

Creative Opportunities

I was impressed with Bobby Goodson's editorial, "The Computer: Opportunity for Change" (February, In My Opinion, page 13). It is exciting to see how computers can make us ask questions and open communications with colleagues and students. Computers also make us carefully examine our sequencing of topics. Elementary and junior high school mathematics curricula can now include more interesting topics than those of the past. It is an opportunity to be creative.

Harry Tunis
Managing Editor
Mathematics Teacher

Facts on File

I have a fondness for computer history and have been a collector of computer trivia for several years. Your November/December issue had some interesting ways to present computer history, but a few facts were wrong.

In "A Computer Carol" (page 29), the transistor was invented in 1949 and in wide use by 1959, not 1961.

In the poster (page 41), supercomputers, not microcomputers, approach speeds of a billion additions per second. In the calendar (page 41), Charles Babbage was born in 1792, not 1791.

Textbooks devoted to computer history are scarce, and those that do exist often have conflicting facts. But I think it's well worth the extra effort to check information in at least two or three sources. ■

Craig Solomonson
Cambridge, MN

Details
The Computer EdGame Challenge is a computer programming contest like no other! It's simple, FREE and big prizes, including royalties, can be won. Schools are encouraged to enter games designed by classes, although anyone — individual students, teachers and professionals — can enter.

Contest Divisions
The contest features two major contest divisions, Elementary (K-8) and Secondary (9-12), with mathematics, language arts, sciences, health/nutrition, geography/social studies and miscellaneous categories.

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How to Enter
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CIRCLE 32 ON READER SERVICE CARD

IDEA OF THE MONTH

Two Monitors Are Better Than One

By Dave Kirchner

Improve class demonstrations by connecting a large and a small monitor to one computer.

The biggest problem I used to have when conducting classroom demonstrations on the computer was to decide where to place the computer monitor. I needed to see the results of my computer input on the monitor at the same time that the kids did. If I placed the monitor in front of me, I could see, but most of my students could not.

I tried moving the keyboard and myself to the side of the computer and craning my neck to catch a distorted view of the screen, but my neck was in excruciating pain by the end of each day.

Then I discovered the perfect solution. I connected two separate monitors to a single computer. This makes a handy system for a teacher. I can input information into the computer and view the results on the screen in front of me, while students view the same information on a screen in front of them.

Connecting two separate monitors to one computer doesn't require an electronics expert. With just a few inexpensive parts from an electronics store, you can connect such a system yourself.

You will need three attachments: a shielded Y adapter ($1.79), a UHF-to-STD pin plug adapter ($1.99), and coaxial cable (20 feet for $6.39). All of these parts are available from Radio Shack stores as well as other electronics or computer retail stores.

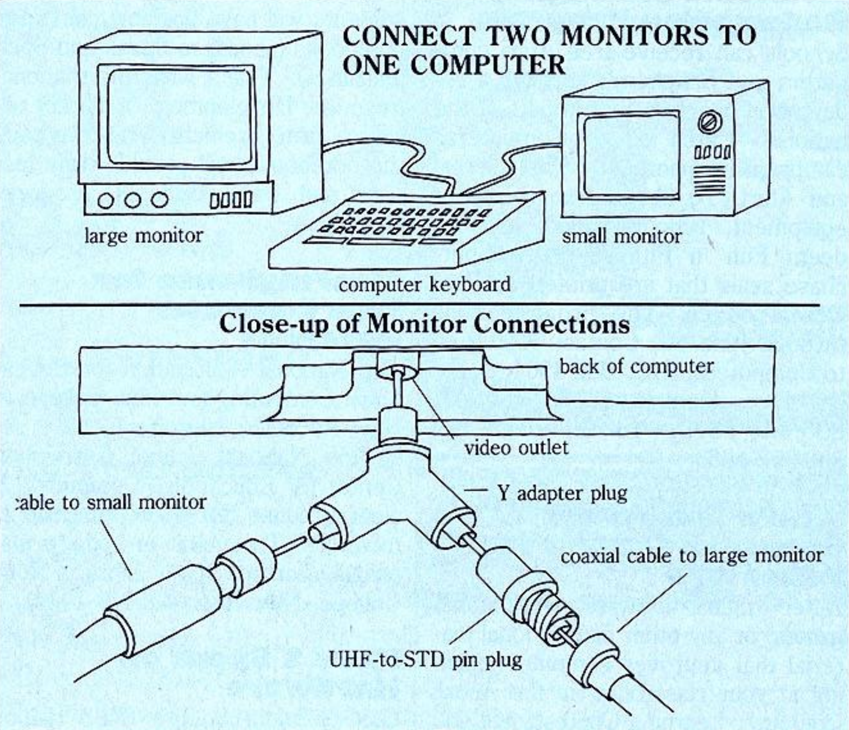
Plug the Y adapter into the video outlet of your computer. Insert one end of the small monitor's cable into the Y adapter; plug the other end of the cable into the small monitor. Connect the UHF-to-STD pin plug into the other outlet of the Y adapter. Plug one end of the coaxial cable into the UHF-to-STD pin plug and the other end into the video outlet on the large monitor. That's it! (The Y adapter sends the video signal down both branches of the Y. Each branch hooks into a monitor.)

If your monitor has a screw-in rather than a plug-in outlet, use a T adapter ($2.59) instead of the Y adapter. The T adapter makes all the same connections as the Y adapter.

This system works with most computers that use separate monitors. However, on some computers you may need to attach the Y or T adapter to the small monitor instead of to the computer. The Commodore VIC-20 works this way.

A television screen can also be used as a second monitor for a computer. To use a TV with the Apple or IBM PC computers, you will have to make one more purchase and adjustment, because the signal put out by these computers is not compatible with the signal expected by a TV. A unit called SUP-R-MOD 2 (approximately $70 at computer stores) can be attached to the TV antenna lead to convert the signal.

The TRS-80 Color Computer, Atari, and Commodore computers already put out a signal compatible with a televison so they do not require this extra adjustment. ■



To connect two monitors to a computer (most types), plug a Y adapter into the video outlet on the computer. Connect the small monitor's cable to the Y adapter. Plug the coaxial cable from the large monitor into the UHF-to-STD pin plug, then insert the pin plug into the other outlet of the Y adapter.

David Lindroth

Dave Kirchner teaches a course called "Computers for Kids" in Denver, Colorado schools.

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CIRCLE 11 ON READER SERVICE CARD

UPDATE

News for Computer-Using Teachers

School Board Members Back Computers

American school board members say computer literacy is a necessity in schools and that they are willing to back this belief with funding. So read the results of a recent survey conducted by *The American School Board Journal.*

Ninety-five percent of the school board members surveyed believe schools have a responsibility to teach computer literacy. In fact, 72.2 percent think computer literacy should be a high school graduation requirement by 1990. An overwhelming 97 percent of the respondents say they would vote for school budgets that include funds for computers.

Free Atari Equipment Available Through Redemption Program

Schools can receive free Atari computers and peripherals through a redemption program that is part of the national "Catch on to Computers" campaign sponsored by Post Cereal and Atari. To obtain free computer equipment, schools collect and redeem Fun 'n Fitness proof-of-purchase seals that are printed on Post Cereal boxes. The program runs through June 30. Contact: Catch on to Computers, P.O. Box 3564, 3 Stuart Dr., Kankakee, IL, 60902; 800/435-7678. In Illinois, call 800/892-1869.

Acorn Computers Sponsors Contest for Educators

Enter original software, workbooks, games, or any other instructional material that improves computer learning in your classroom, in the Acorn Computer Learning Contest, and you may be one of six winners to receive an Acorn computer. The contest is open to K–8 educators. Deadline for entries is April 30. For entry forms and information, write Acorn Computer Learning Contest, c/o Scholastic Inc., 730 Broadway, New York, NY 10003; 212/505-3485.

Free Software Available from ECN

Educational Computing Network (ECN), a nonprofit teachers' organization, offers free educational software for Apple computers. More than 15 programs are available.

There is a $15 charge to duplicate each program on a disk and mail it to you. If you send in your own disk, the fee is $6. For more information, send a self-addressed, stamped envelope to Educational Computing Network, P.O. Box 8236-CS, Riverside, CA 92515.

What Next? Computer Notebooks!

Within the next four years, all of your students will have portable computer notebooks (similar to Speak-and-Spell machines). That's what International Resource Development, a market research firm, predicts. The firm says the notebooks will provide daily lessons and track students' progress with them.

Clearinghouse for Free Computer Materials

The National Association for Educational Computing and Iona College of New Rochelle, New York, have set up the National School Curriculum Center for Educational Computing, a clearinghouse for free educational materials. To submit or acquire materials, contact Ryan Library, Iona College, New Rochelle, NY 10801.

More $ Spent on Hardware

U.S. schools bought $488 million worth of microcomputer equipment in 1983. Hardware purchases accounted for $450 million, while only $38 million was spent on software, according to a report by Knowledge Industries Publications. ■

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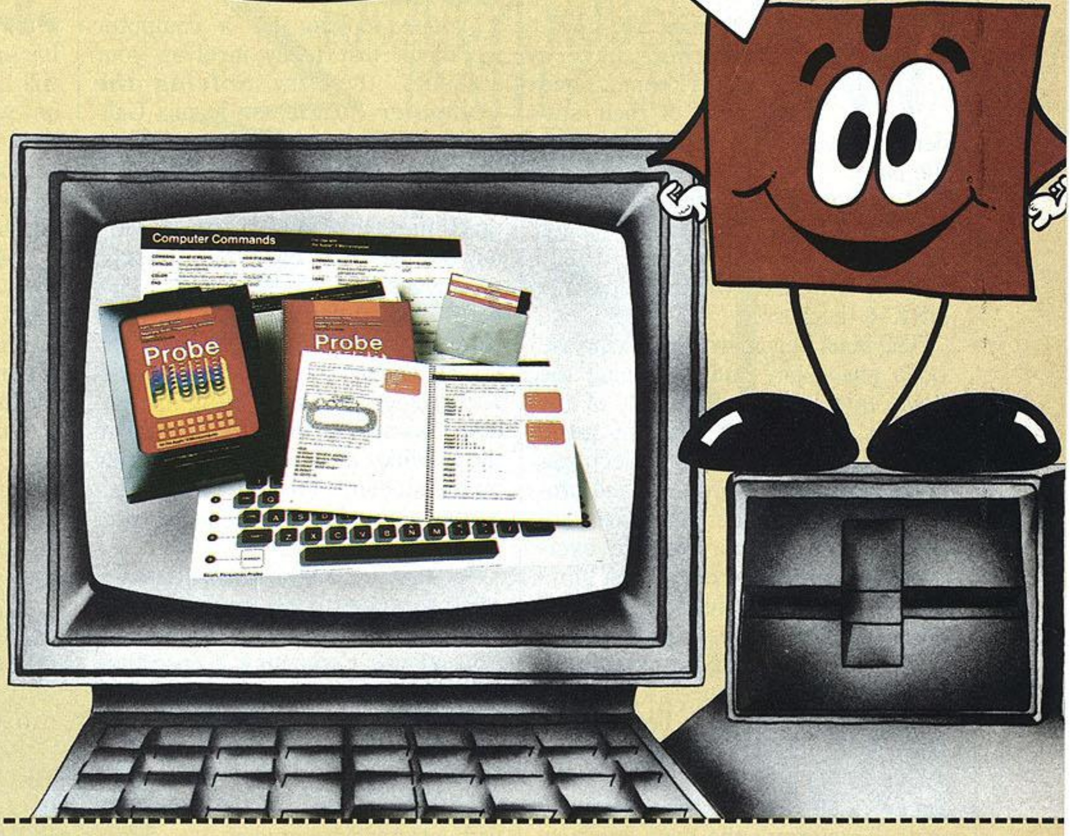
A version of PROBE is available for beginners of all ages, from primary grades to adults. And there's a PROBE package for most microcomputers. Cut out the coupon below and send for free information. Or ask your local software dealer about PROBE.



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Electronic Publishing Division
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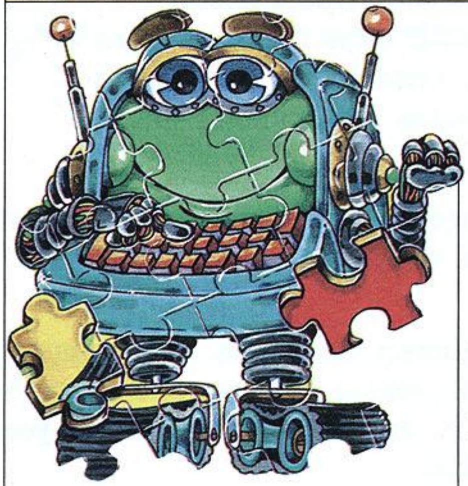
BOOKSHELF

Books for Logo Lovers

By Judy Simmons



Solving the Computer Puzzle *lures kids into literacy.*

When it comes to Logo, many teachers have a hard time keeping one step ahead of their students. These Logo books can keep the pace.

Teacher, Kids, and Logo, by Carolyn Green and Christi Jaeger (EduComp Publications; 1983; $15.95) is a guide written especially for K–6 teachers.

The book begins by introducing the Logo philosophy and examining the Logo environment. The rest of the book is divided into different grade levels. Each level has three sections: math, computer awareness, and programming. Even the appendices are full of teaching aids, practice exercises, and additional resources.

Commands are given for both MIT Logo and Apple Logo. For any teacher who is serious about using Logo with the class, this one is a must!

William J. Masalski has written ***Run with Logo*** (Milton Bradley; 1984; $6) an activity book that introduces Apple Logo to the first-time user. Throughout the book are "turtle hurdles" to warn of possible trouble spots, "word sprints" to explain terms, and "marathon activities" to stretch the user's imagination. The clean, bold format makes it a pleasure to use.

Some teachers have found that Big Trak, a programmable toy manufactured by Milton Bradley, is helpful in introducing many of the basic concepts used in Logo. To help you take advantage of the educational uses of Big Trak, Tom Rowley and Ron Leckrone have written ***The Big Trak Book: Your Computer on Wheels*** (Reston Publishing Co.; 1984; $12.95). The book includes 25 games and activities on skills, such as estimating, following directions, spatial relationships, map reading, programming, and problem solving.

No More Ho-Hum Workbooks

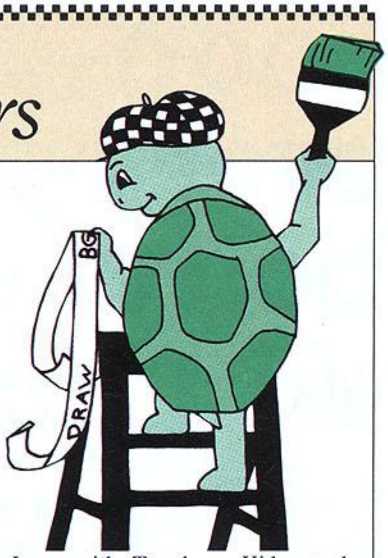
If you're looking for a computer workbook that really involves your students, then try ***Solving the Computer Puzzle***, by Joanna Galipault and Barbara Kinsman (Milton Bradley; 1984; $6). The exciting format lures students into computer literacy through activities with or without the use of a computer. Although it's suggested for kids six and up, it's better suited for nine- to 12-year-olds.

The animated graphics and busy format keep this from being just another ho-hum workbook. Several of the activities are open-ended and rely on the student's imagination. The activities cover flowcharts, simple programming, and more.

A teacher's dream come true — that describes ***101 Activities for Computer Classes*** (Minnesota Educational Computing Consortium (MECC); 1983; $18; $9 for MECC members). Although recommended for junior and senior high students, many of the worksheets and classroom management forms can be used with intermediate grades.

The book is divided into three sections. The first one gives a brief description of each activity. The next section contains worksheets that can be removed and duplicated. The last section gives answer keys for the worksheets.

The material is not a teaching tool in itself. It is intended to provide teachers with supplementary activities when teaching computer literacy or computer programming.



Learn Logo with Teacher, Kids, and Logo.

Parents' Purchase

It's only natural that some parents will come to teachers to ask advice on which computer to buy, when they hear their kids boast about their computer accomplishments. Instead of giving personal opinions about certain brands of computers, it might be a good idea to recommend a book that reviews personal computers. Jerry Willis and Merl Miller have written such a book, ***Computers for Everybody: 1984 Buyer's Guide*** (dilithium Press; 1984; $19.95).

Written for the beginner, this 582-page book reviews 144 computers, ranging from $45 to $5,000. The book includes information on computer companies, as well as resources available to owners. ■

Publishers' Addresses

dilithium Press, P.O. Box 606, Beaverton, OR 97075.

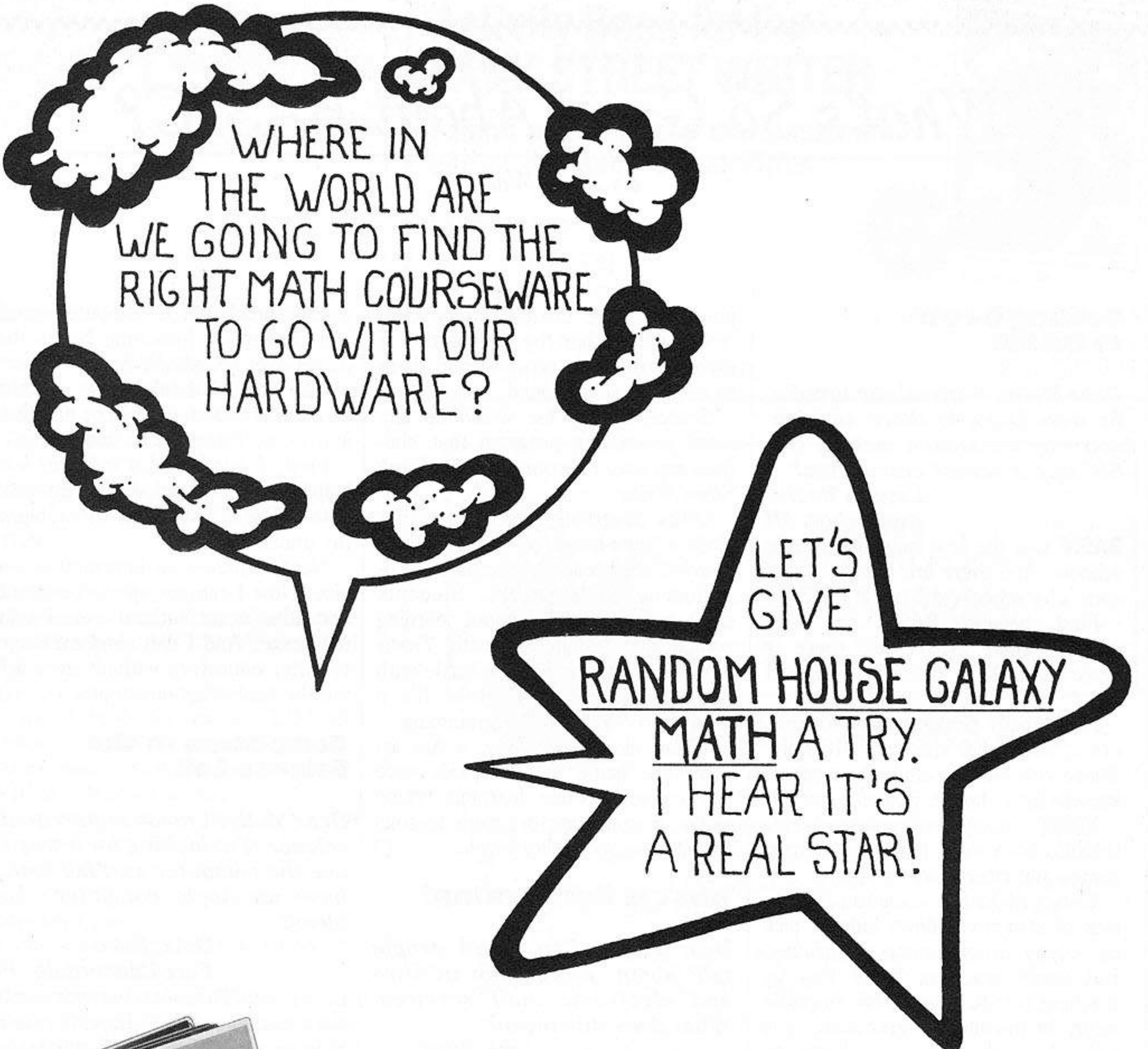
EduComp Publications, 14242 Wyeth Avenue, Irvine, CA 92714.

MECC, 2520 Broadway Drive, St. Paul, MN 55113.

Milton Bradley, 443 Shaker Road, East Longmeadow, MA 01028.

Reston Publishing Co., 11480 Sunset Hill Road, Reston, VA 22090.

Judy Simmons is a librarian at the Robert E. Lee Elementary School in Denton, TX.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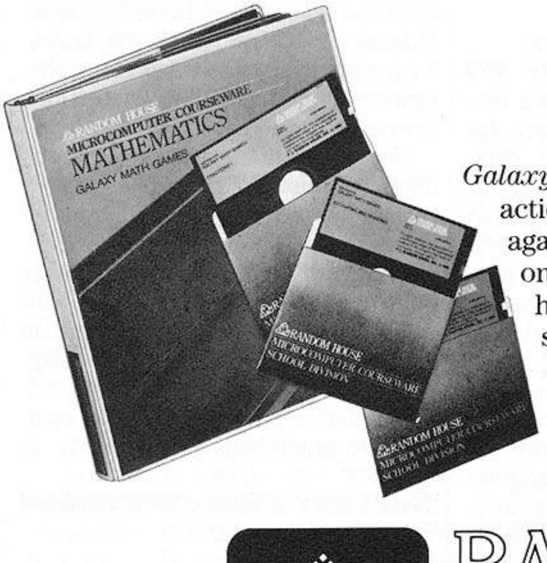
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CIRCLE 24 ON READER SERVICE CARD

QUESTION CORNER

What's So Great About BASIC?

By Molly Watt

Getting Down to BASIC

Dear Molly: With all the brouhaha over Logo, is there any reason why we should include BASIC in our school curriculum?

Lauren Radler
Ann Arbor, MI

BASIC was the first language used in schools. And there are plenty of reasons why schools still use it.

First, because BASIC has been around longer than Logo, there is more material to teach and support it.

Next, many students have computers at home that speak BASIC only. These kids need to apply their school knowledge at home, and vice versa.

Finally, many youngsters prefer BASIC, because it facilitates writing games and interactive programs.

Critics of BASIC complain that its lack of structure allows kids to pick up sloppy programming techniques. But many teachers avoid this by teaching BASIC in *modular programming.* In modular programming, you take a big task and break it down into many steps. Structured languages, like Logo and Pascal, use modular programming.

Using modular programming in BASIC usually means dividing complicated programs into subroutines. If students learn BASIC this way, they will make an easier transition to higher level programming. ☐

Software for Atari

Dear Molly: The parents in my school raised $400 to buy software for our new Atari. What programs should we buy?

Lucy Tart
Greenwich, CT

The top of my suggestions list goes to Logo. The Atari version includes list processing and turtle graphics. It also has 128 colors and four turtles that move around on the screen independently. The turtles can be controlled with either the keyboard or a joystick. And you can program them to make a *tooting* sound.

Second on my list would be any word processing program that children can use. I recommend the *Bank Street Writer.*

Other programs I recommend include a "mini-language," called *Turtle Tracks,* that teaches computer programming to beginners. Students don't have to worry about learning complicated commands with *Turtle Tracks.* They maneuver a turtle with procedures in plain English. It's a great introduction to programming.

I also like *MasterType,* a fun arcade-type game that lets kids save the universe while learning typing skills. It contains 18 typing lessons for all ages and ability levels. ☐

What is Networking?

Dear Molly: I've heard people talk about information utilities and electronic mail services. What does this mean?

Jane Barry
Kirksville, MO

Information utilities are vendors that charge consumers varying fees for time spent using their specific databases and services.

These services often include AP or UPI newswires, education newswires, educational software programs, research information in a variety of fields, and occupational information and statistics.

Many information utilities, like CompuServe and The Source, also offer electronic mail and electronic bulletin board services. Electronic mail allows you to exchange messages with specific members. Electronic bulletin boards let you "post" messages that all members can read.

Using an information service is sometimes called hooking into a network. To do this, you need a *modem.*

A modem is a device that takes the digital signal that a computer sends and converts it into tone beeps that travel over telephone lines.

Like you, I didn't know anything about information utilities or electronic mail, so I decided to find out.

First, I purchased a modem. I installed it in a special slot on my computer. Then I attached the cable to my phone jack.

Next, I joined an information service. Now I can get up-to-the-minute education news without ever leaving my home. And I can send messages to other educators without ever licking the seal of an envelope. ☐

Computers in the Science Lab

Dear Molly: I teach eighth grade science. I'm looking for a way to use the computer as a lab tool. I have an Apple computer. Any ideas?

Doug Bacon
Fort Lauderdale, FL

Lucky you. There is a hardware-software package, called *Experiments in Human Physiology,* that will transform your micro into a laboratory instrument and turn your students into scientists.

The innovative package lets students measure and record heart rate, respiration rate, skin temperature, and response time.

Students using the program gather information for experiments with touch-sensitive probes. They can gather their information in one day. Or they can gather it over an extended period of time and use the computer to graph behavior patterns. ☐

Software Recommended by Molly

Atari Logo
Hardware: Atari (16K)
Grade Level: Kindergarten–Adult
Price: $99.95
Contact: Atari, 1312 Crossman, Sun-

nyvale, CA 94086; 408/745-2000.

Bank Street Writer
Hardware: Atari, Commodore 64, Apple
Grade Level: Grades 4–12
Price: $95
Contact: Scholastic Inc., 730 Broadway, New York, NY 10003; 212/505-3129.

Turtle Tracks
Hardware: Atari (32K), Commodore 64, TI 99/4A, VIC-20, Apple, IBM PC
Grade Level: Grades 3–Adult
Price: $39.95 for Apple, IBM PC disks; $29.95 for Commodore 64, Atari disks; $19.95 for TI 99/4A, VIC-20, Atari cassettes
Contact: Scholastic Wizware, 730 Broadway, New York, NY 10003; 212/505-3000.

MasterType
Hardware: Atari (16K), Commodore 64, Apple, IBM PC
Grade Level: Grades 1–Adult
Price: $39.95 for Apple, Commodore 64, Atari; $49.95 for IBM PC
Contact: Scarborough Systems, 25 N. Broadway, Tarrytown, NY 10591; 800/882-8222.

Experiments in Human Physiology
Hardware: Apple
Grade Level: Grades 6–12
Price: $249
Contact: Human Relations Media Software, 175 Tompkins Ave., Pleasantville, NY 10570; 800/431-2050. ■

Do you have a computer question? Send it to Teaching and Computers' *expert, Molly Watt. Molly teaches computer education courses at Keene State College in Keene, New Hampshire. Write her in care of* Teaching and Computers, *730 Broadway, New York, NY 10003.*

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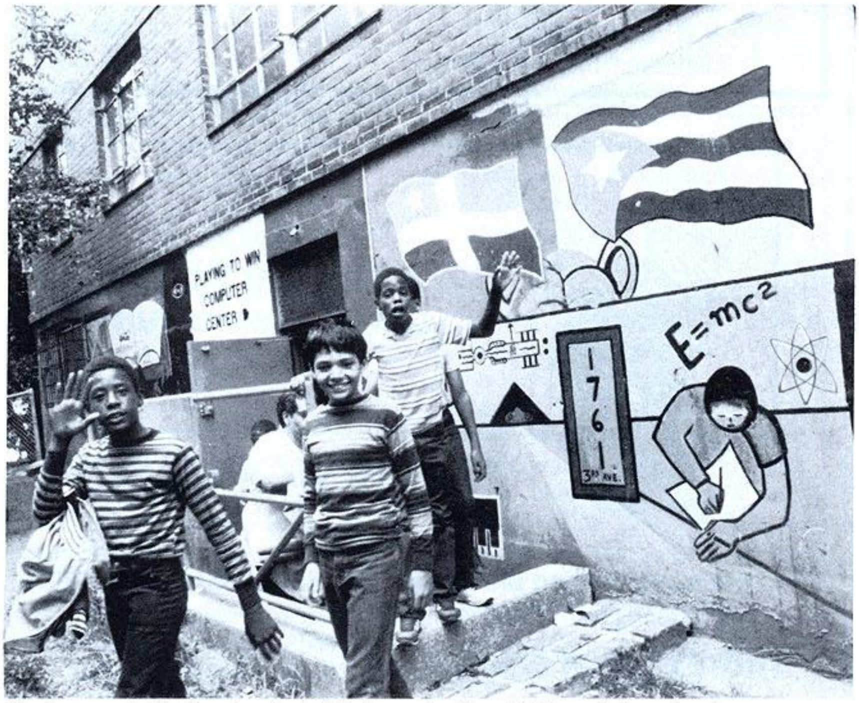
CIRCLE 19 ON READER SERVICE CARD

CLASSROOM HAPPENINGS

By Lesli Rotenberg



The basement of a housing project is home for these kids' computer adventures.

Computing to Win

Monday is the best day for attendance in Ben Sender's class at B.E.T.A. School in New York City. On that day, the eighth and ninth grade students in his class visit the East Harlem Computer Center.

The students, who have a variety of behavioral, emotional, or learning disabilities, have a poor attendance rate at school. But all 23 of them eagerly attend computer class on Mondays.

Although many of the students have trouble reading, they have no trouble at all operating a computer. Since October, the class has spent almost two hours every week learning to program in Logo at the center. They have advanced from programming simple shapes to drawing the New York skyline.

"Their work at the computer makes them feel successful," Ben says. He thanks the East Harlem Computer Center staff for making the computer experience possible.

The center is a converted classroom located in the basement of a public housing project. Schools and neighborhood organizations reserve time on the 20 computers there for a small fee.

The center staff works with teachers and group leaders to plan and implement computer instruction. Besides weekly computer time, students can use the center during vacations and school holidays for up to 15 hours.

The center is run by Playing to Win, a nonprofit organization dedicated to promoting computer use for minorities, inmates of correctional institutions, juvenile delinquents, and other socially handicapped people.

For more information on Playing to Win, contact Tony Stone, 106 East 85th St., New York, NY 10028; 212/650-0229. □

Fastest Cat in the West

Margaret Armstrong, the librarian at Mountain View Elementary School in Broomfield, Colorado, has a cat that helps students find library books in a jiffy.

It's the "Computer Cat" electronic card catalog system. Unlike traditional card catalogs, the "Computer Cat" is easy enough that young children can use it without supervision.

Students simply type the first four or five letters of the subject, title, or author they want into the computer. For example, a student writing a report about cars types CARS on the keyboard. Then all the items in the library that relate to cars immediately appear on the screen.

The student selects one book from the list by pressing the appropriate letter. The book's title appears on the screen along with its call numbers, author, subject, cross references, and librarian notes.

Then the student jots down this information on paper and trots off to the library shelves to get the book.

One of the advantages of a computerized card catalog is that kids who don't know how to alphabetize yet can use it. Learning disabled children and children with limited spelling skills can also use the system because they don't have to input too many words.

Margaret says that students like using the system. "They head right for it when they walk in the library door," she says.

"Computer Cat" runs on Apple computers and requires a Corvus hard disk drive. It costs $995 for use with one computer and $1195 for use with several computers. Contact: Colorado Computer Systems, Inc., 3039 West 74 Ave., Westminster, CO 80030; 303/426-5880. ■

Mindy Pantiel, Becky Petersen

Tools of the trade from Reston

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My Students Use Computers.
An excellent guide that provides a scope and sequence of objectives and activities for integrating computers into the K-8 curricula. R4805-9, cloth, $23.95.

1,2,3 My Computer and Me.
By joining in the escapades of the rabbit and turtle, children discover and learn all about Logo. R5228-3, paper, $10.95.

Triple Brain Trust.
An excellent game for improving basic reading and question-answering skills with topics like General Sports and Movie Trivia. R8790-9, book/disk, $34.95.

Turtle Sourcebook.
A comprehensive guide and workbook for adults working with children learning Turtle graphics. R7890-8, paper, $21.95.

Using Microcomputers in the Classroom.
An excellent introduction to the personal computer, with the emphasis on applications of micros in schools. R8144-9, paper, $12.95.

Creating Computer Programs for Learning.
This guide shows you how to use BASIC to create instructional programs. R1168-5, paper, $14.95.

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CyberLOGO Turtle
is an easy way to learn version of Logo. One of the best ways to learn and explore about computers. R1203-0, box/disk, $79.95.

Elements of CAL.
It covers the basic concepts necessary to understand how good computer aided learning is created, plus new and innovative ideas to experienced practitioners. R1700-5, paper, $16.95.

Kids and the VIC.
An entertaining, step-by-step approach to BASIC programming on the Commodore VIC computer for beginners. R3671-6, paper, $19.95.

Academic Apple.
Written for parents and teachers who are interested in helping youngsters learn with the aid of an Apple computer. R0033-2, paper, $10.95.

Apple Logo Primer.
This handbook makes learning Logo with an Apple II easy for anyone—no previous experience needed! R0314-6, paper, $14.95.

BASICally Speaking.
A beginner's guide to BASIC programming and the story of the microcomputer. R1168-5, paper, $14.95.

Computer Literacy: Programming, Problem Solving, Projects.
Encourages a hands-on exploration of the computer with a unique approach to BASIC programming. R0860-8, paper, $15.95.

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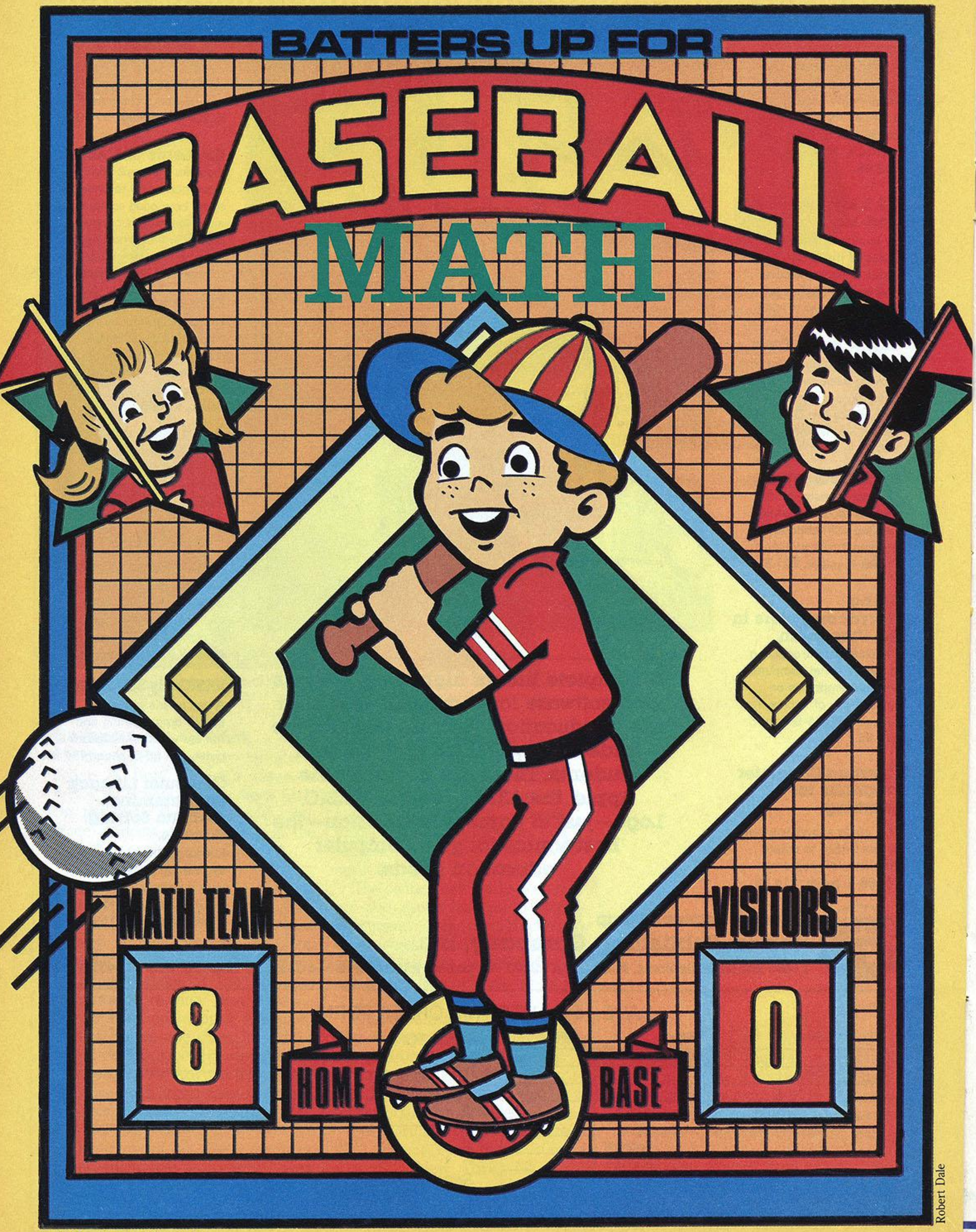
CIRCLE 25 ON READER SERVICE CARD

BATTERS UP FOR BASEBALL MATH


MATH TEAM
8
VISITORS
0
HOME
BASE

Robert Dale

BATTERS UP FOR BASEBALL MATH

Turn Your Students into Math All-Stars with this Teaching Unit on Baseball Statistics.

By Richard Devir

It starts when professional pitchers and catchers report for spring training in February and lasts until the final World Series game in October. Baseball season. At home and away, in big and little leagues, on sandlots and Astroturf, fanatics young and old will spend the next few months celebrating America's favorite sport.

You can go to bat for baseball this season and teach important math and programming skills at the same time. The following teaching unit provides you with a baseball simulation that's even more fun than the real thing. During the electronic game, kids count the number of times they go to bat and the number of hits they get. They also record the number of games they play and the number they win. They will use this data to write programs in BASIC that calculate their batting averages and their team's won-loss percentage.

As they play ball, your students will learn about math ratios and percentages. The programs they write will give them practice with PRINT, LET, and INPUT commands.

THE OPENING PITCH

Divide the class into two or more baseball teams. Have each team choose a name and a scorekeeper, who will keep track of the team's base runners and their scores

Play the baseball simulation game (see box, next page). Have kids record their times at bat and their total hits. When calculating total hits, don't count walks. Students will use these records later to find their batting averages.

CHARTING THE ACTION

Do you have any all-star hitters in your class? Find out by writing a program to calculate this. But first, ask students what constitutes a good hitter. Professional baseball teams consider a good hitter to be a player with a batting average of .300 or better. A batting average is a ratio of hits to times at bat. The average .300 means that the player hits the ball three out of 10 times at bat.

To find a batting average, you divide the number of hits a player made by the number of times the player went to bat.

Put this formula on the board: batting average = hits/times at bat. Ask your students to use this formula to calculate the highest batting average in history. It belongs to Ty Cobb, who got 4,191 hits out of 11,429 times at bat. (The answer is .367.)

Now tell students they are going to write a program that will make the computer calculate batting averages. The first step in writing such a program is to design a flowchart. A flowchart shows the exact steps needed to solve a problem, in this case, to calculate a batting average.

A completed flowchart for calculating batting averages is on the opposite page. Refer to the chart as you read these step-by-step instructions.

Each flowchart shape has a special meaning. An oval tells where to start or stop. Draw an oval and write "start" inside.

When you begin a program, you should always make sure the computer doesn't confuse it with another program that it has in its memory. That's why you clear the screen. For the same reason, you set all of the variables equal to zero at first. You do this with a LET statement. For example, you can set variable *X* equal to zero with this command: LET X = 0. Rectangles indicate that specific jobs need to be performed, like clearing the screen, or adding two numbers together. Draw a rectangle and write "Clear screen," inside. Write "Set variables to 0," inside a second rectangle. Connect the shapes with arrows.

The next shape is a polygon. Polygons are used to show input and output. Draw a polygon and write "Get hits," inside. Write "Get at bats," inside a second polygon.

The next two steps belong inside rectangles because they are jobs to be performed. Write "Divide hits by at bats," and "Round to nearest one-thousandth," inside rectangles.

Write "Display batting average," inside a polygon, because it represents output.

You will need one more shape for your flowchart — a diamond. Diamonds indicate yes-no decisions. Inside your diamond, write "Want to find another batting average?" If the player answers "yes" to this question, the program should start over. Draw an arrow from one side of the diamond to the first step of the flowchart. Label it "yes." Draw another arrow straight down, label it "no," and draw an oval underneath to end the program. (For more information about flowcharting, see Learning Center in *Teaching and Computers,* January 1984, page 34.)

(continued)

BATTERS UP FOR BASEBALL MATH

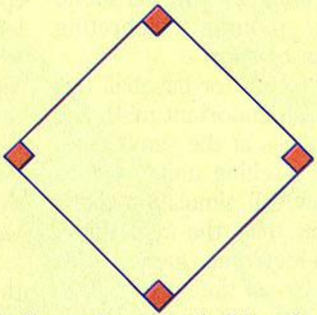
PLAY BALL! AN ELECTRONIC SIMULATION GAME

Any rookie can play this fun baseball simulation. Type the following program into an Apple computer. (Conversions for other computers are on page 60.)

```
10 HOME
20 REM BASEBALL SIMULATION
30 PRINT “WELCOME TO THE GAME”
40 PRINT “WHAT IS YOUR NAME?”
50 INPUT N$
60 PRINT N$;“ IS UP TO BAT”
70 PRINT
80 PRINT “HERE COMES THE PITCH”
90 FOR S=1 TO 500: NEXT
100 PRINT
110 PRINT “IT'S A . . .”
120 PRINT
130 FOR D=1 TO 1000: NEXT
140 X=INT(20*RND(1))+1
150 IF X<4 THEN PRINT “STRIKE OUT. TOO BAD.”
160 IF X=4 THEN PRINT “WALK. ADVANCE TO FIRST BASE.”
170 IF X=5 OR X=6 THEN PRINT “DOUBLE. GO TO SECOND BASE.”
180 IF X=7 THEN PRINT “TRIPLE. WHAT A HIT. GO T0 THIRD BASE.”
190 IF X=8 THEN PRINT “HOME RUN. THE FANS ARE
ROARING. RUN AROUND THE BASES.”
200 IF X>8 AND X<13 THEN PRINT “SINGLE. ADVANCE
ONE BASE.”
210 IF X>12 AND X<17 THEN PRINT “GROUND OUT. BETTER
LUCK NEXT TIME.”
220 IF X>16 THEN PRINT “FLY OUT. RUNNERS ADVANCE
ONE BASE.”
230 PRINT “TYPE 1 IF THERE'S ANOTHER PLAYER.”
240 PRINT “TYPE 2 IF GAME IS OVER.”
250 INPUT R
260 HOME
270 IF R=1 THEN 40
280 IF R<>2 THEN 230
290 PRINT “SEE YA NEXT GAME, SLUGGER.”
300 END
```

This program simulates an actual baseball game. Two teams of students take turns at bat. But each player gets only one attempt to hit the ball (instead of the usual three).

On the chalkboard, draw a diamond like the one in the picture. If a batter gets a hit, the scorekeeper puts an X next to first base if it's a single, second base for a double, and so on. The scorekeeper also moves runners who are already on base accordingly. Every time a player reaches home base, the player's team scores a point. After nine innings, the team with the most points wins.



Draw a baseball diamond on the chalkboard and mark the players' positions with X's.

(continued from page 19)

GET OUT YOUR SCORECARDS

The next step is to translate the words and symbols of the flowchart into BASIC using PRINT, LET, and INPUT commands. (Check programming texts or past columns of Learning Center for instruction on these commands.) Following is a step-by-step guide for writing the program on an Apple computer. (See chart, page 60, to convert this program for use on Atari, Commodore, Radio Shack, and TI machines.)

STEP 1. Number program lines by 10's. Start by clearing the screen with:

```
10 HOME
```

STEP 2. Choose names for the variables (for example, HITS for hits, AB for times at bat, and AVG for batting average), and set them equal to zero like this:

```
20 LET HITS = 0
30 LET AB = 0
40 LET AVG = 0
```

STEP 3. Ask for the information you need from each player, using PRINT commands. Insert INPUT commands that let players answer.

```
50 PRINT “NUMBER OF HITS”
60 INPUT HITS
70 PRINT “TIMES AT BAT”
80 INPUT AB
```

STEP 4. Have the computer perform the calculation:

```
90 LET AVG = HITS / AB
```

STEP 5. The answer will be a nine-place decimal. To make it a three-place decimal that resembles standard batting average statistics, you must round it to the nearest one-thousandth. You may have the students perform the operation with paper and pencil. Or you may include the following step in the program:

```
100 LET AVG = INT((AVG +
   .0005) * 1000) / 1000
```

STEP 6. Now display the answer:

```
110 PRINT “BATTING AVERAGE
   IS”; AVG
120 END
```

If you want to give the user a chance to find another average, without having to rerun the program, add these statements:

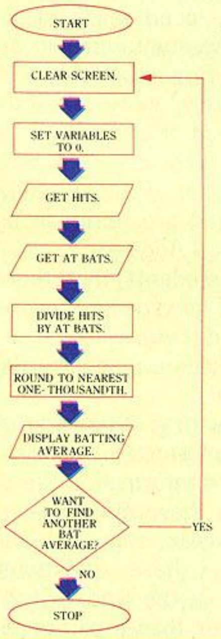
```
112 PRINT “DO YOU WANT TO
   FIND ANOTHER BATTING AV-
   ERAGE (ENTER ‘1’ FOR YES, ‘2’
   FOR NO)"
114 INPUT RPT
116 IF RPT = 1 THEN GO TO 10
```

WORLD SERIES BOUND

After you have played a few games, challenge students to write a similar program for calculating team won-loss percentages. That's how many games you won compared to the number you played. A team that is World Series bound usually has a won-loss percentage over .650. That means the team wins 65 out of every 100 games it plays.

To find your team's won-loss percentage, you divide the number of games your team won by the number of games it played (won *and* lost). Use this formula: won-loss percentage = games won/games played. Like the batting average statistic, this number should be rounded to the nearest thousandth (step 5 above).

Flowchart for Calculating Batting Average:



Following is a program for calculating won-loss percentages.

```
10 HOME
20 LET GW = 0
30 LET GP = 0
40 LET WL = 0
50 PRINT "NUMBER OF GAMES
   WON"
60 INPUT GW
70 PRINT "NUMBER OF GAMES
   PLAYED"
80 INPUT GP
90 LET WL = GW / GP
100 LET WL = INT((WL + .0005)*
   1000)/1000
110 PRINT "WON-LOSS PERCENT
   IS"; WL
120 END
```

CHALLENGES FOR BONUS PLAYERS

All little leaguers hope to be bonus players someday. (That's the name for rookies who get large sums of money for signing big league contracts.) If your students can write programs to calculate batting averages and won-loss percentages, then they are ready to move from the bush league into major league programming. Here are some challenges for these designated programmers.

CHALLENGE 1: Different Strokes for Different Folks

Although it's as American as mom and apple pie, baseball may not be everyone's favorite sport. But every sport has statistics that can be used in a computer program. Encourage football fans to compute completed pass percentages and basketball fans to write programs that calculate foul shooting averages. (Take the batting average program and substitute attempts for at bats and successes for hits. For a true percentage figure, round to two places rather than three.)

CHALLENGE 2: Programmers' Hall of Fame

Real baseball fans know the difference between a hitter and a slugger. A slugger is a player that hits long balls and usually gets past first base on every hit.

Have students use the following information to write a program that calculates a player's slugging percentage. Find the number of at bats, singles, doubles, triples, and home runs. Then use this formula to get the total bases a player won: singles + (2 x doubles) + (3 x triples) + (4 x home runs). Divide total bases by the number of times at bat for the slugging percentage.

CHALLENGE 3: The Official Draft

Charts and graphs are natural spin-offs of statistics. Your students can plot statistics with a computer graphing program. If your school doesn't have a graphing program, use graph paper. Display their colorful graphs on a bulletin board shaped like a baseball diamond.

CHALLENGE 4: Take Me Out to the Ball Game

Don't confine your baseball activities to the classroom. Ask students to monitor TV and radio broadcasts of actual games. They can collect scores from the grandstands by attending high school, college, and professional baseball games, or they can play a series of actual baseball games themselves and use the statistics.

Well, enough locker room babble. It's time to get your team on the field, coach. But before you go, try to answer this baseball trivia question: What player holds the record for RBI's (Runs Batted In)?

The answer is Babe Ruth, who drove in 2,209 runs in his career. ■

HOT OFF THE PRINTER!

PICKERING'S DAILY EXPRESS APRIL 1984

PUBLISH A CLASS

All you need to write your own newspaper is a computer,

By Beth Deardorff

EXTRY! EXTRY! READ ALL ABOUT IT!

Fighting Rages in Lebanon!

Shoppers Bombard Cabbage Patch Dolls!

Gerbils Scarce in Bangor!

WHERE DO I TURN FOR the latest news? Not to the *New York Times*, but to *Pickering's Daily Express*, a four- to eight-page newspaper published by students in my sixth grade English class. Besides the latest in local, national, and international news, the *Express* contains editorials, interviews, reviews, cartoons, poetry, and recipes.

How do these young reporters and editors do it? With a little help from their computer, of course! Using a word processing program, students have the ability (and motivation) to write and revise their articles with ease. A printer provides them with clean and neat copy. The finished product is a professional-looking newspaper that students, teachers, and parents alike can enjoy.

To "get the printer rolling" in your classroom, teach students how to use a word processing program. Then follow this teaching unit. It introduces students to the basic elements of good newspaper writing and tells you how to organize a newspaper staff in your room. The four task cards provided at the end of the article give students practice at newswriting and editing on a word processor.

TEACH THE ELEMENTS OF A NEWSPAPER ARTICLE

Bring in issues of local and national newspapers. Point out the basic elements of typical stories: the *headline* (article title), *deck* (short sentence or phrase that draws the reader in), *lead* (introduction), *byline* (writer's name), and *dateline* (origin and date of story). Also point out the news section of the paper as well as the features, entertainment, and editorial sections.

Have students take a closer look at the elements that follow:

Headline: Write these sample headlines on the board:

(1) Shuttle Schedule Up in Air
(2) Crime: Slap the Cuffs on It!
(3) Pick a Peck of . . . Peanuts?

Tell students that headlines are like telegrams; every word in them counts. Are headlines always complete sentences? (No. Due to limited space, they often lack articles and sometimes do not contain verbs, as in example number one.) What makes these headlines good ones? (The first one contains a play on words. The second example begins with a word that encapsulates the subject of the article. It also contains a strong, active verb to create a vivid image. The third headline draws on a familiar saying and captures the reader's interest by not revealing everything.)

Can you think of a catchy lead for an article on popcorn flavorings?

P-NUT BUTTER
CHOCOLATE

Cut out articles from several newspapers and remove the headlines. Mount the untitled articles on stiff paper and laminate them. Have students write headlines for each of the articles.

Lead: A story's lead, or introduction, has to grab the reader's attention. In general, good leads start with the most important word or words in the story. For example, "Peace and prosperity were the subjects of President Reagan's State of the Union Address," is better than, "President Reagan talked about peace and prosperity in his State of the Union Address."

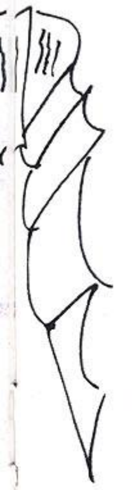
Tell students that there are two kinds of newspaper stories, *news stories* and *feature stories*. Each has slightly different standards for effective leads.

News story: A news story contains timely information about an event. All facts and information are directly related to these questions: *who, what, where, when, why,* and *how*. In news articles, these questions are answered in the lead, which is usually no longer than a paragraph. The remaining paragraphs elaborate on the details of the story (the five *W*'s), in

PICKERING'S DAILY EXPRESS

ROOM NEWSPAPER

this handy teaching unit, and students with a nose for news.



order of importance. This process is called *inverted pyramid* writing. In an inverted pyramid, the most important details of a story are written first, and the least important, last. So, if an article has to be cut to fit a space in the newspaper, editors can chop off the bottom paragraphs without losing essential information. Or, if a reader decides not to read the entire article, he or she will still gain the most important facts.

Have students identify news stories in newspapers and find the five *W*'s for each.

As students read the news stories, point out that good articles use precise words with punch — lively adjectives, concrete nouns, and active verbs. For example, "Wild flames consumed the attic and top floors, despite fire fighters' efforts to save the doomed building," is better than, "The fire got out of control."

Feature Story: Feature stories are, in general, human interest stories. They are often about animals, unique hobbies, babies, or an interesting (but not particularly newsworthy) experience. Unlike straight news stories, features don't have to appear in tomorrow's paper. They can appear next week and still be interesting.

Feature leads can be longer than news leads. Often they contain a bit of intrigue that makes the reader want to read on. Here are a few kinds of feature leads:

1. *Summary:* A summary lead gives overall details of an event. Here's an example:

"Each day, students at Central Elementary School in Columbia, Louisiana, broadcast a radio news show! They report on current events, weather, science, and sports."

2. *Novelty:* A novelty lead arouses interest without disclosing everything. Here's an example:

"Citizens in the Northeast fear it. Canadians insist that the U.S. get rid of it. And President Reagan proposes that we study it. 'It' is acid rain."

3. *Question:* A question lead starts with a probing or interesting question. Here's an example:

"What do clam chowder, onions, chocolate, and peanut butter have in common? Believe it or not, they're all popcorn flavorings!"

4. *Quotation:* A quotation lead starts with an interesting or provocative quote. Here's an example:

" 'If the U.S. ever got bombed, it would sure be a lot worse than what we saw on TV.' That was one viewer's response to *The Day After*, a televised movie about a nuclear holocaust."

Mount sample headlines from feature articles on stiff paper. Laminate the headlines and distribute them to the class. Have students write summary, novelty, quotation, and question leads to match the headlines.

Have students write an entire feature story on one of these topics: an unusal pet, a funny thing that happened, or a friend's hobby.

Cut out the four task cards at the end of this article and laminate them. Place them in your computer center for children to work on. Students will need a computer and a word processing program to complete the cards. The task cards provide exercises on writing headlines, leads, and newspaper stories.

ORGANIZE A STAFF

Choose an editor in chief and section editors for news and feature positions on your paper. (More advanced classes may wish to have editorial and entertainment section editors, too.) These editors should have good leadership qualities. Their jobs are primarily ones of organizing, paying

(continued)

Ideas for features can come from interesting hobbies or adventures.

Mindy Ball

EDITOR IN CHIEF

(continued from page 23)

attention to detail, and working with other students.

Another important staff member is the copy editor. He or she is in charge of proofreading all the articles for spelling and grammar. A good spelling and English student is needed here.

Depending on the size of your class, other jobs can include beat reporters, reviewers, interviewers, artists or cartoonists, keyliners in charge of pasting up the newspaper, a production manager in charge of printing and running off copies, and a circulation manager in charge of distributing the paper.

One way to assign positions is to have students "apply" for them. Their applications should contain a letter explaining why they would be good at a particular position and what kinds of innovations they would bring to the paper. Tell students that you will assign positions based on the qualifications and ideas stated in their applications.

When the positions are filled, conduct an editorial staff meeting. Decide on the name of the paper, the number of pages, deadlines, who will receive the newspaper, and other important details.

ASSIGN ARTICLES

Put the editor in chief in charge of a class brainstorming session to determine story ideas for the first issue.

- List national and international news of interest to your paper's readers.
- List school news: an accident on the playground, an upcoming open house, building improvements, and so on.
- Brainstorm feature story ideas, such as interviews with teachers or parents, articles on community groups, short stories or poetry, an advice column, recipes, and cartoons.
- Discuss entertainment possibilities, such as publishing book and movie reviews, a calendar of school activities, and the cafeteria menu.
- Perhaps students would like to include a few editorials as well.

Have the copy editor write all brainstorming ideas on the board.

You will probably end up with an abundance of feature article proposals. It's up to the editor in chief and section editors to decide what's important, to assign a good balance of articles, and to impress upon workers the importance of meeting deadlines.

DICTIONARY

WRITE AND EDIT THE NEWSPAPER

If a limited number of computers are available for word processing, have students write their first drafts on paper and then transfer them to the computer for final editing.

Before writing anything, however, students must outline their ideas. Have them jot down topic sentences, possible leads, phrases, and so on, to help them formulate their ideas. Then have them organize their notes into an outline.

Review students' outlines and make suggestions for using livelier words, specific details, and examples to back up opinions.

Students are now ready to write their articles. They will probably finish their first drafts at different times, allowing you to stagger computer time. After students have typed their stories into the computer, encourage them to use the word processor to fine-tune them.

Writers should save their stories on disk or cassette under a *slug*, a short, one-word description of the story. Near the computer keep an editorial schedule that lists the article's name, the author, the section editor in charge, and the slug.

As writers finish their articles, their section editors should edit the stories, checking for missing information, clarity, libel, accuracy, organization, and length. The editor in chief then reviews all stories, looking for stray errors and overlap between articles.

The copy editor then proofreads the final drafts to correct spelling and grammar and signals the production manager that the stories are ready for printing.

LAYOUT AND PRINT THE NEWSPAPER

The way you design the columns of your newspaper depends on artistic taste and the computer equipment available to you.

For our newspaper, we use letter-size paper and fit three columns of copy on each page. The columns are 20 characters each, including spaces between words and punctuation. This leaves a five-space *gutter* between each column and a five-space margin on each side. For some features, book reviews, or personal columns, we use a two-column, 33-character format. This leaves four spaces of gutter between the two columns and five for the margins.

Some computer equipment allows you to position articles the way you want them on a page before you run the printer. Ours does not.

Our production manager prints out stories separately (usually at 20 characters wide) and turns them over to the keyliners, or pasteup artists. The keyliners use rubber cement to paste up all copy, art work, and page numbers onto our newspaper pages.

When the *mechanicals* (pasteups of the pages) are complete, the production manager makes enough copies for all our readers.

Once the circulation manager has seen that your papers have been distributed, conduct a *post-mortem* session. Gather the entire staff and flip through the newspaper together. What articles and layouts were most successful this issue? Could anything be improved next issue? ■

Beth Deardorff teaches English at Adams School in Orono, Maine.

NEWSPAPER TASK CARDS

NEWSPAPER TASK CARD #1

THE FIVE *W'S*

Feline Rescued from Burning Building
Misty, a black cat, was rescued from a burning building by fire fighters in Angora, Maine, late Monday night. When the fire fighters reached 114 Hancock Street, the building was already engulfed in flames. Mr. and Mrs. Tom Jakes, residents of the home, had escaped unharmed, but the family's pet cat remained inside. Fire fighters found Misty crouching by the kitchen door and removed her safely from the building.

Directions:

1. Read the news story carefully.
2. Use a word processor to list the five *W's* of a news story: who, what, when, where, and why.
3. Read the article again. After each *W*, fill in an answer.
4. SAVE your work and PRINT a copy for yourself.

NEWSPAPER TASK CARD #2

LEAD ON THE LOOSE

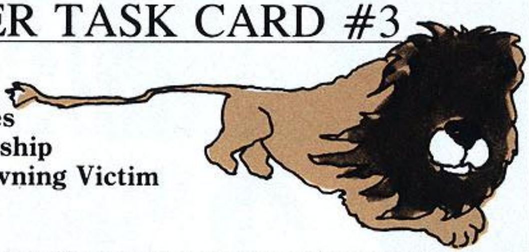
A horse was found loose. It was in the way of traffic and was also eating people's gardens.

Directions:

1. Use the word processor to type the lead onto the computer screen.
2. You're the editor in charge of this story. Pretend that you know all the details of the runaway horse and REPLACE or ADD words to make this lead more colorful. Remember to include the five *W's*.
3. SAVE the lead and PRINT a copy for yourself.

NEWSPAPER TASK CARD #3

LEADS AWAY!



Circus Lion Escapes
Farmer Sees Spaceship
Woman Saves Drowning Victim

Directions:

1. Choose one of the headlines and use your word processing program to write a good lead.
2. Add your byline and a dateline to the story.
3. Edit the article by ADDING exciting words or REPLACING dull words. Have you included the five *W's*?
4. SAVE the text and PRINT a copy for yourself.

NEWSPAPER TASK CARD #4

EDIT, EDIT, EDIT!

There are no clues or suspects at this time.

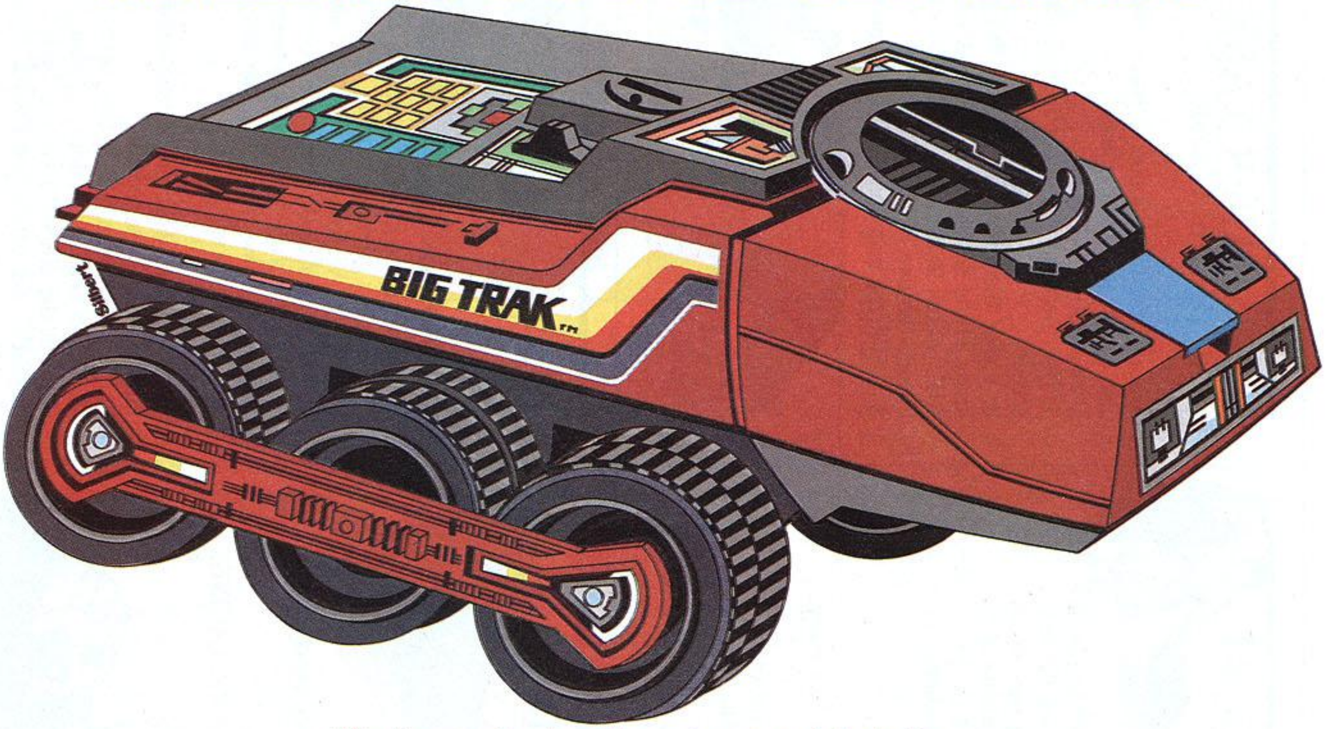
Thursday morning, shortly before noon, a masked gunman held up the Walker Grocery Store and escaped with over $900.

Mr. John Walker, the store's owner, said the man must have entered the store while he was busy with a customer. The man appeared behind him with a gun and asked for the contents of the cash register.

Directions:

1. Using your word processing software, type this scrambled article onto the screen.
2. Put the paragraphs in the correct order.
3. Add a headline, a deck, a byline, and a dateline to the story.
4. Edit the article to make it better.
5. SAVE the article and PRINT a copy for yourself.

GET GOOD MILEAGE OUT OF BIG TRAK



Bill Silbert

Whether you're teaching science, social studies, math, or language arts, Big Trak can steer students in the right direction.

By Shiela Swett

Who would ever have guessed that a programmable toy in the shape of a tank would become the star attraction in classrooms throughout the country? The toy is Big Trak, and children of all ages are fascinated with its capabilities.

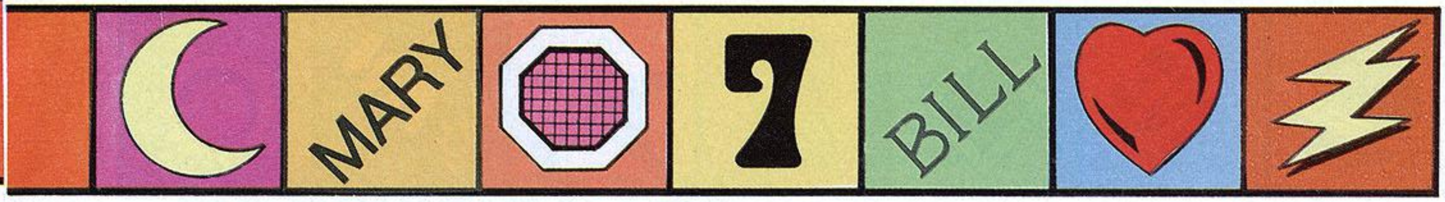
By using simple programming, they can get Big Trak to move in any direction, and from one foot to several hundred feet in distance.

I bought two of these black tanks (for about $50 apiece) to use with my students. Because I didn't like their military appearance, I painted one red and the other blue and green. The first looks like a fire truck now, and the latter, an outer space planetary explorer! To complete the demilitarization of my trucks, I placed tape over each truck's FIRE key — a key that, when pressed, emits a beam of light that simulates cannon fire.

Big Trak has been a great help in introducing computers to children. What does it have in common with Apples, Radio Shacks, and Commodores? More than you'd imagine — and making the comparison with your students is an ideal way to begin developing computer awareness.

Big Trak shares three basic features with computers: input, a central processing unit, and output. Like a microcomputer, it has a keyboard for *input.* As far as *processing* goes, it has a small memory and can be programmed to perform a few simple commands. The commands are far easier (and less sophisticated) than Logo or BASIC. B.T.'s *output* does not appear on a screen or printer, as on most computers, but is in the form of physical activity. It moves across the floor in response to commands.

At the same time you teach programming with Big Trak, you can also teach and reinforce basic skills in reading, math, science, and social studies. Here are a few activities to begin your long and successful journey with Big Trak.



READING

Objective: Develop word recognition.

Tape together several sheets of 9″ x 13″ colored construction paper (see photograph). This will be the road Big Trak travels along as children learn to program it. Teach students how to program B.T. to move forward and backward. (See box on the next page.) On separate cards, write the color of each of the colored sheets that makes up the road, and hand one card to each student. Have a student read the color word written on his or her card and then program Big Trak to go to that color on the paper road. Big Trak moves 13 inches when programmed forward or backward one unit. So, to move Big Trak to the right spot, the student counts the cards B.T. must cross to reach the color and then enters that number, along with the proper directional commands.

When the first student has completed a turn, have another student program Big Trak to drive to the color written on his or her card. This may entail programming Big Trak to go backward as well as forward.

Once students are familiar with reading color words, place other words on the road. For instance, write a student's name on each road card. Call out a name and have that student program Big Trak to go to his or her name on the road.

Similar activities can be used with older students to drill them on vocabulary words. Place vocabulary word cards on the road and then call out the definition of one of the words. Have students program the truck to drive to the word that correctly matches that definition.

MATH

Objective: Develop estimating skills.

Once students are familiar with how far Big Trak moves per unit, remove the colored road. Select a student to stand with his or her feet apart anywhere in the classroom. Now have another student estimate how many units would place Big Trak between the first child's feet. Have the student point Big Trak in the right direction and run the program to see if the estimate was accurate. Encourage students to estimate and experiment. Watch the estimates improve as students get more practice!

Up until now, students have only learned how to program B.T. to move forward and backward. Now teach them how to move B.T. right and left. (See box on the next page.)

After students can program the truck to move in all four directions, have them practice writing programs that will enable Big Trak to travel from one designated spot to another. Have students work in pairs. On a piece of paper, one student writes a program for Big Trak, such as: UP 2, RIGHT 15, UP 1. The author of the program hands the paper to his or her partner. This student studies the program, and then goes to the spot where he or she thinks B.T. will end up. Now have the first student run the program to test the estimate.

Children take turns programming BT to travel to their names.

SCIENCE

Objective: Teach about the solar system.

Divide the class into nine groups and have each group report on a different planet in our solar system. Reports should include basic planet statistics, such as the planet's diameter, its distance from the sun, and how long it takes to revolve around the sun. Encourage "reporters" to include projections about life on the planet, to discuss elements and gases that might exist on the planet, and so on.

On the day students are to report to the class, collect 10 balls and label one ball for each planet and one for the sun. Place the ball representing the sun in the center of the floor. Position the other balls (the planets) approximately two feet apart, in the order in which they revolve around the sun. Place Big Trak in front of the ball representing the sun, and have the group that studied Mercury program it to revolve once around the sun and then travel to the planet. When B.T. lands in front of Mercury, the group reports its findings to the class. Repeat this exercise with each planet and each group.

SOCIAL STUDIES

Objective: Teach map skills and urban planning.

Divide the class into two groups. Have each group plan and draw a map of a model town for Big Trak to drive through. The towns should include stores, houses, and municipal buildings — everything a real town needs. Advise groups to design the town so that important buildings and areas (e.g., parks and parking lots) are placed in convenient locations.

Once the town has been thoughtfully planned, have the group construct it using blocks, cardboard, and milk and juice cartons. A variety of buildings can be created by cutting and taping cardboard shapes to resemble structures, or by covering different sizes of milk and juice car-

(continued)

(continued from page 27)

tons with construction paper and drawing in windows and doors.

Now have the other group drive the truck around town and inspect the urban planning. Was everything accessible? Was there a park in town? Was there anything that was left out or that should be changed?

If you're looking for a vehicle to gear up your students for computer literacy, before they sit down to the keyboard, Big Trak is your answer. It will develop a few academic skills as well! Unfortunately, Big Trak has become increasingly difficult to find in major department stores, which have carried them for several years. There are two reasons for this. The first one is that teachers have been scooping Big Trak up as they realize its ability to develop important skills. The second factor is that Milton Bradley stopped manufacturing Big Trak in January.

There are other programmable toys you can use to perform some of these activities, however. One is Turtle Tot, a round, two-wheeled robot that looks a little like a turtle. An interface card connects Turtle Tot to an Apple, Commodore 64, or IBM PC computer so that it can be programmed in either BASIC or Logo. Like Big Trak, Turtle Tot can be programmed to move in all possible directions, but it also has speech capabilities (more than 150 words) and touch sensors that make it aware of obstacles in its way. Turtle Tot costs $299 and is distributed by Harvard Associates, 260 Beacon St., Somerville, MA 02143.

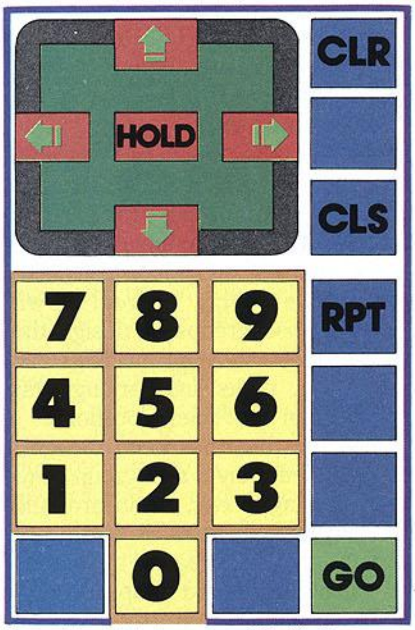
Another programmable toy, the Memocon Crawler, is similar to the Turtle Tot but performs fewer functions and costs about one-third as much. The Memocon Crawler, about half the size of the Turtle Tot, can be programmed in BASIC only. It will move forward, back, left, and right when connected to a computer with a parallel interface, or to a handheld device called a teach pendant. The Memocon Crawler does not have speech capabilities or touch sensors. For more information on it, see this month's Tools of the Trade, page 59.

Shiela Swett is a computer consultant at Rippowam-Cisqua School in Bedford, NY. She is also a contributing editor for *Teaching and Computers* magazine.

HOW TO PROGRAM BIG TRAK

Located on Big Trak's back is a colorful keypad students can use to enter programs that will start Big Trak's wheels turning. Here is how students use important keys on this pad:

CLR This is the clear key. Pressing this key erases all instructions from B.T.'s memory. Every time B.T. completes a procedure, you should press this key. Otherwise, when a new procedure is entered, Big Trak will repeat the previous program and *then* perform the new command.



Keypad used to program Big Trak.

GO Pressing the GO key tells B.T. to start the program. Big Trak will begin to perform immediately after GO is pressed.

▲▼ The UP and DOWN arrows at the top of the keypad move Big Trak forward and backward. Pressing one of these keys will move Big Trak in a given direction, but you must also tell Big Trak how far to move. You do this by pressing numbers on the keypad. One unit will make Big Trak move 13 inches. Say you wanted to move B.T. forward 39 inches, then you would press the CLR, ▲ 3, and GO.

◀▶ The LEFT and RIGHT arrow keys instruct Big Trak to turn. Big Trak turns like the hands on a clock, using units 1–60. Suppose you wanted Big Trak to turn 90 degrees to the right. On a clock, that would put you at 15 minutes. Therefore, you would press CLR, ▶ 15, GO.

HOLD The HOLD key instructs Big Trak to pause for a period of time. One second is represented by the number 10. If you wanted Big Trak to pause for six seconds, you would enter HOLD 60 at that particular point in the procedure.

RPT The RPT key repeats a procedure the number of times you indicate. For instance, if you want to make B.T. move forward approximately eight feet, but pause three seconds every two feet, you would enter ▲ 2, HOLD 30, RPT 4. This key allows you to make geometric shapes and figures, like squares and rectangles, with one procedure.

These are the important keys for programming Big Trak in the classroom. Big Trak can program 16 consecutive commands, and up to 99 units of measure, so you can go a long way with a little tank! ■

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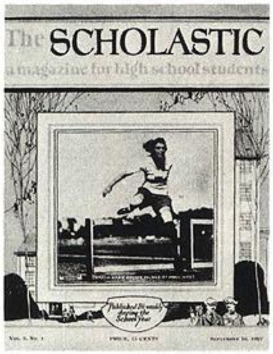

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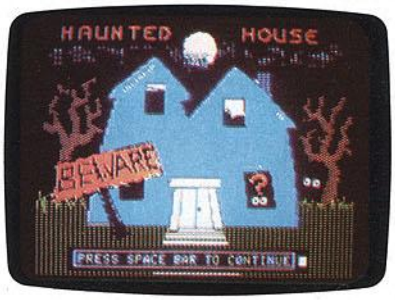


Microzine Premiere Issue, Haunted House: An Interactive Story. Computer graphics by Technigraphics. Designed and developed by Information Technology Design Associates.

Scholastic™ Wizware

ELECTRONIC CALENDAR — TEACHER'S GUIDE

Robots

By Lorraine Hopping

The April calendar teaches students about robots. This teacher's guide provides background information for the activities discussed on the calendar.

April 1, 3

What Is a Robot?

A robot is a computer-controlled device that can be programmed and reprogrammed to perform different manipulative tasks without direct human interaction.

Some robots have sensor devices that enable them to detect and measure sound, light, motion, heat, and touch. These sensors can be used in programs written for the robot. For example, a robot could be programmed to turn up the thermostat in your classroom whenever its heat sensor detected a temperature drop below 65 degrees.

April 13

Quick Quiz Day

1. *False.* Few robots can talk and understand speech. Those that can, can understand only the simplest of voice commands.
2. *True.* Some robots can even move chess pieces on a board.
3. *True.*

April 11

Play "Robots"

To play "Robots," write a few simple commands on the board (see calendar). One student is the programmer and the other is the robot. Programmers use the commands on the board to program their robots to do simple tasks. For example, to program a robot to do a math problem on the board, the programmer might tell the robot, who is facing the board, to WALK (to the board), PICK UP (a piece of chalk), and CALCULATE (a problem written on the board).

April 25

Robots in Space

Unmanned space vehicles are robots, because they can manipulate objects, work without the direct contact of humans, and can be programmed to do several tasks.

The *Viking Landers,* for example, landed on Mars, experimented with soil samples, took photographs, checked for "marsquakes," and relayed data to Earth independently for several years.

April 26

Robot Ethics

Science fiction writer Isaac Asimov addressed the issue of robot ethics in his stories. He wrote three laws for robots to follow. Paraphrased, these laws state that (1) robots cannot injure a human being and must protect humans from injury; (2) robots must obey human orders, except in violation of the first law; and (3) robots must protect their own existence, except in violation of the first two laws.

April 27

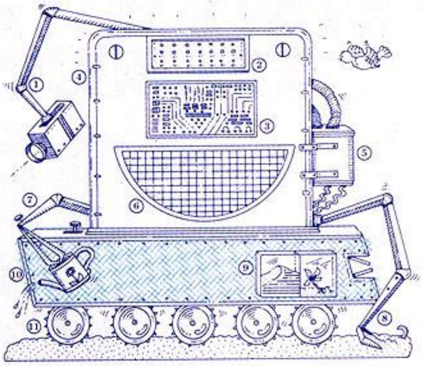
Quick Quiz Day

1. *True.* One robot mousetrap on the market contains a dish and a scale. The robot weighs any creature that steps on the scale. A lightweight object, such as a mouse, causes the robot to spring a trap. Something heavier, such as a cat, makes the robot deposit food (more bait) in the dish.
2. *True.* Some robots perform tasks that are dangerous or impossible for humans to do, such as detonating a bomb or diving deep into the sea.
3. *False.* Robots have very poor vision. Many cannot tell the difference between a human and a lamppost.

April 30

"Design a Robot" Contest

Post the illustration of Gardner T. Robot (next page). Discuss Gardner's parts and how they work. How does Gardner tell weeds and flowers apart? (It has a smelling sensor and a video camera.) How does Gardner keep from trampling flowers? (It has touch-sensitive mesh around the bottom to detect obstacles.)



Theresa Anderko

Have students work as a class or in small groups to create their own robot for the *T&C* "Design a Robot" Contest.

One winner from each grade category, K–2, 3–5, and 6–8, will receive $100 to spend on computer materials for the classroom.

To enter, have class members draw a design of a robot and label all the parts. They must include a short description of what their robot does and how it works.

Entries will be judged on overall design, understanding of how robots work and what they can do, and creativity.

Each entry must include the name, home address, home phone number, and grade level of a sponsoring teacher, as well as the school's name.

Send entries by **June 15, 1984**, to "Design a Robot" Contest, *Teaching and Computers*, 730 Broadway, New York, NY 10003.

Entries cannot be returned unless accompanied by a self-addressed, stamped envelope. All material submitted by prizewinners becomes the exclusive property of *Teaching and Computers.* ■

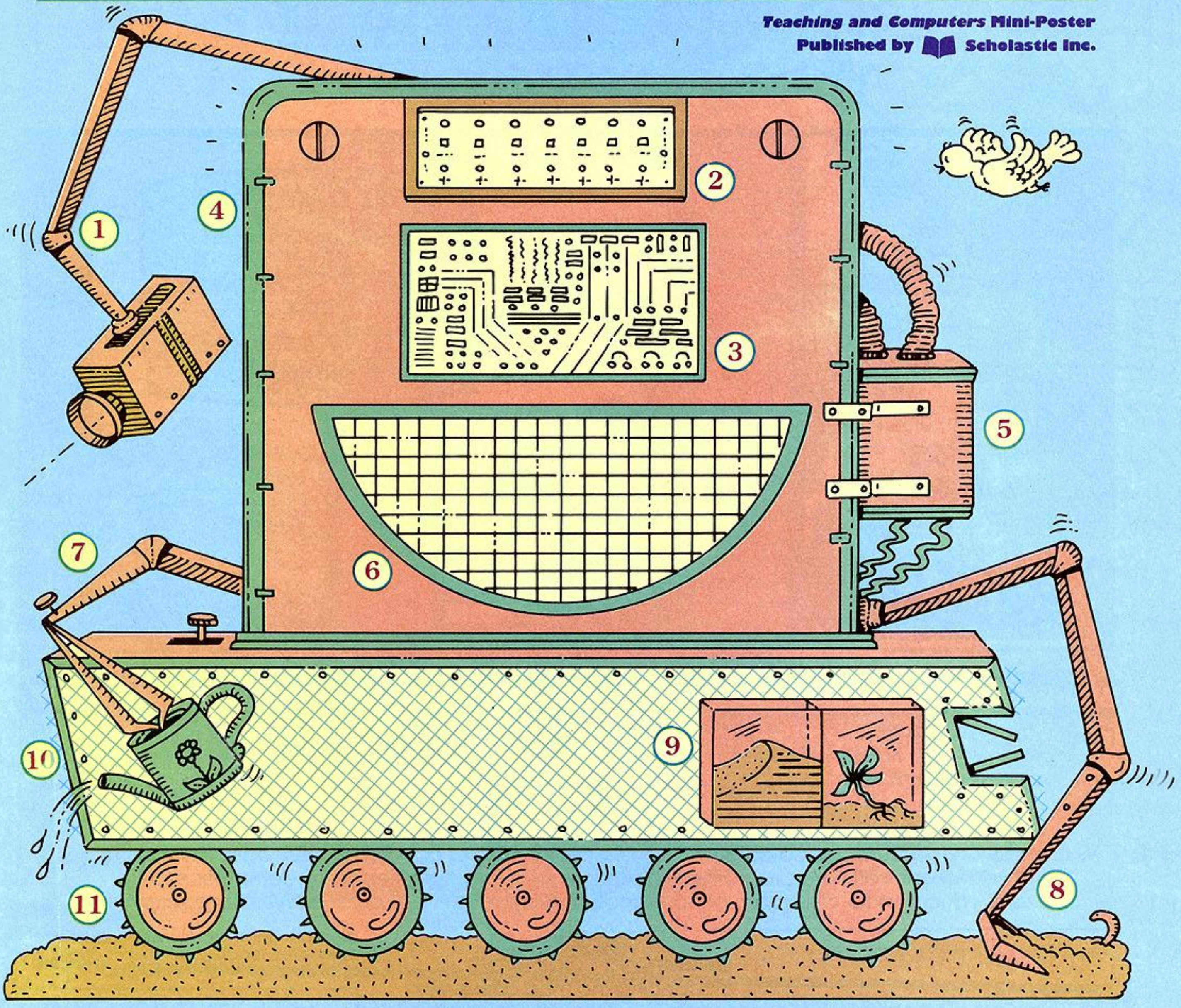
Lorraine Hopping is assistant editor for *Teaching and Computers.*

CLIP AND POST

G·A·R·D·N·E·R · T · R·O·B·O·T

A ROBOT THAT PULLS WEEDS AND WATERS FLOWERS

***Teaching and Computers* Mini-Poster**
Published by Scholastic Inc.



1. Video camera looks for small objects that look like plants. Can see the ground from any angle and has a zoom lens to look at things close up.

2. Interface port hooks Gardner to an outside computer. Gardner can be reprogrammed to mow lawns, trim bushes, and chase dogs.

3. On-board computer uses information it gets from soil samples, the video camera, and the smell sensor to do Gardner's job better. Stops Gardner when the wire mesh runs into an object.

4. Waterproof sunshield protects Gardner from hot sun, rain, and other bad weather.

5. Optional **battery pack** lets Gardner work for three extra hours before recharging.

6. Smell-sensitive vent keeps Gardner from overheating. Smell sensors can also can tell flowers from weeds.

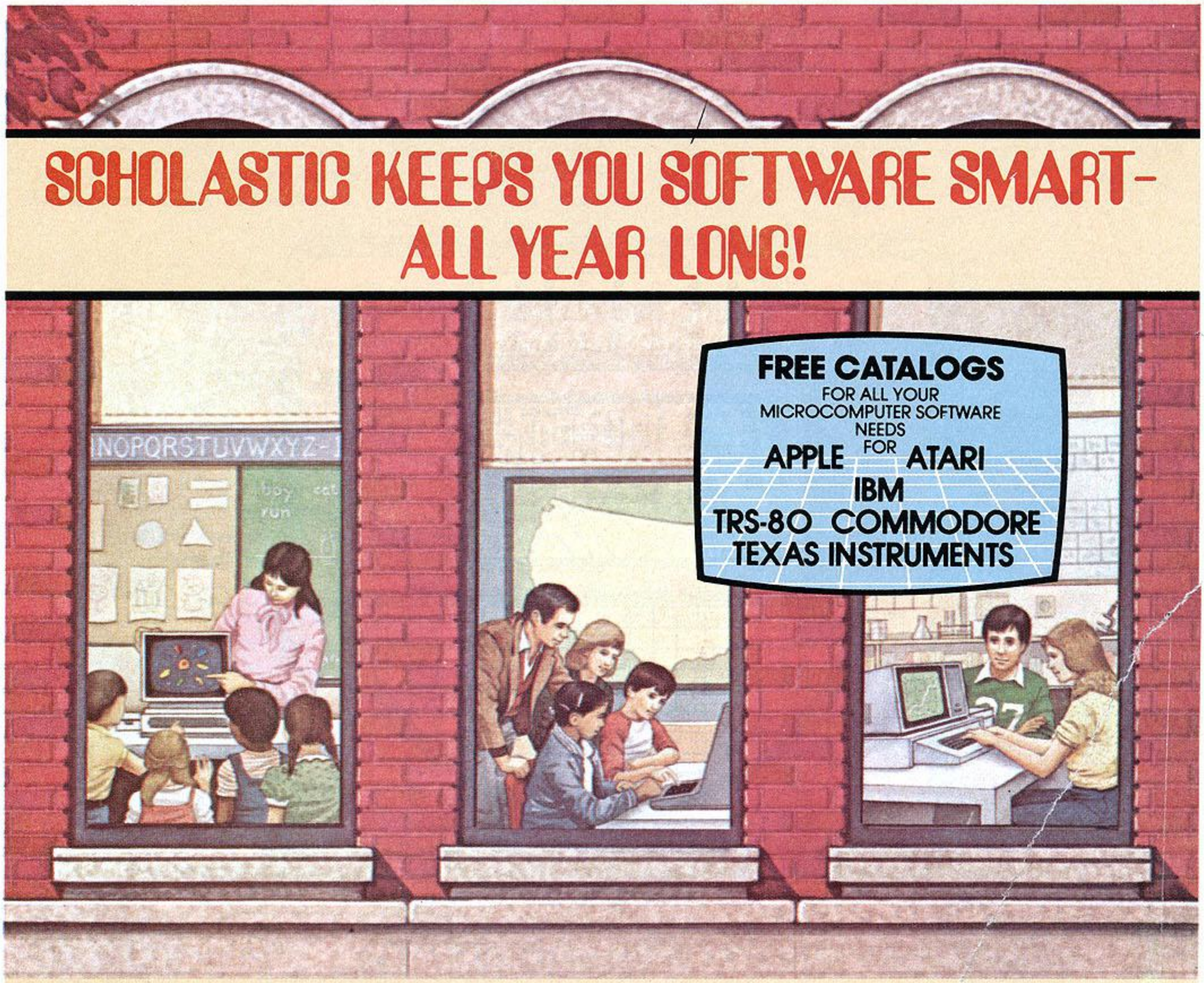
7. All-purpose **mechanical arm** can use the watering can, garden hose, and other objects.

8. Soil scoop collects soil and sends it to on-board computer to check for dryness and nutrients. Can spread fertilizer if needed. Also works as a **weed puller**. Drops weeds through door at left for storage inside Gardner's pouch.

9. Storage pouch has space for pulled weeds and separate place for up to two pounds of fertilizer.

10. Fine, touch-sensitive **wire mesh** detects things that will get in Gardener's way, like rocks and hoses.

11. Spiked wheels let Gardner move in dirt.



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CIRCLE 27 ON READER SERVICE CARD

Calendar and Poster
pages 33-36 missing

KID'S PAGE

LOOK WHAT I CAN DO!

I can make April showers bring May flowers! Can you? Here's my *April* program listing:

```
TO APRIL
RAIN
CS
FLOWER
END

TO RAIN
ST
PRINT [APRIL SHOWERS...]
REPEAT 150 [PU RT RANDOM 360 FD
RANDOM 100 PD SETHEADING 0
RAINDROP]
END

TO RAINDROP
HT
RT 20 FD 12
END

TO FLOWER
PU FD 20 PD
HT
REPEAT 12 [BK 20 RT 30 FD 20]
BK 100 RT 45 FD 30 BK 30 LT
90 FD 30 BK 30
PRINT [...BRING MAY FLOWERS!]
END
```

Boot Logo into your computer. Then type the APRIL, RAINFLOWER, RAIN, and RAINDROP procedures exactly as shown. To start the program, type APRIL and press RETURN.

April Superchallenge

Can you make more than one May flower bloom? (Hint: use the FLOWER procedure two or more times.)

Make a bouquet of daisies, tulips, and asters.

Write a CLOUD procedure to run on rainy days and a SUN procedure for sunny days.

Lorraine Hopping
Northville, MI

J·O·K·E·F·I·L·E

Q: What did the programmer order at the deli?
A: One sub to go. Hold the bugs.

Adam Shapiro
Grand Rapids, MI

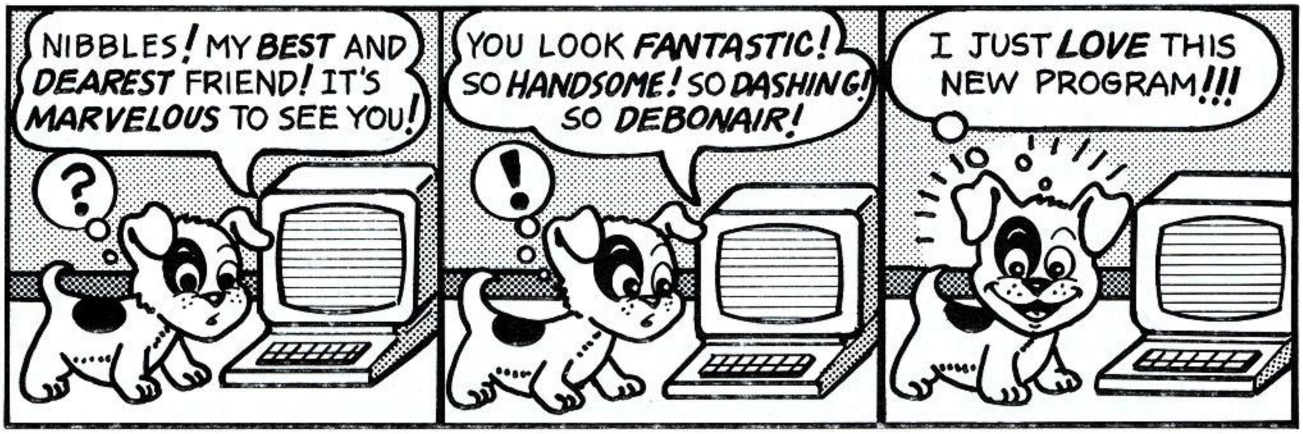
Q: Why did the computer cross the road?
A: It was the chicken's day off.

Ryan Mahoski
Davenport, IA

SALESPERSON: Here's a great computer for $1,000.
CUSTOMER: I can't afford a whole computer. How much is a quarter worth?
SALESPERSON: About one byte (two bits).

Marilyn Rogers
Contoocook, NH

NIBBLES


NIBBLES! MY BEST AND DEAREST FRIEND! IT'S MARVELOUS TO SEE YOU!
?
YOU LOOK FANTASTIC! SO HANDSOME! SO DASHING! SO DEBONAIR!
!
I JUST LOVE THIS NEW PROGRAM!!!

Robert Dale

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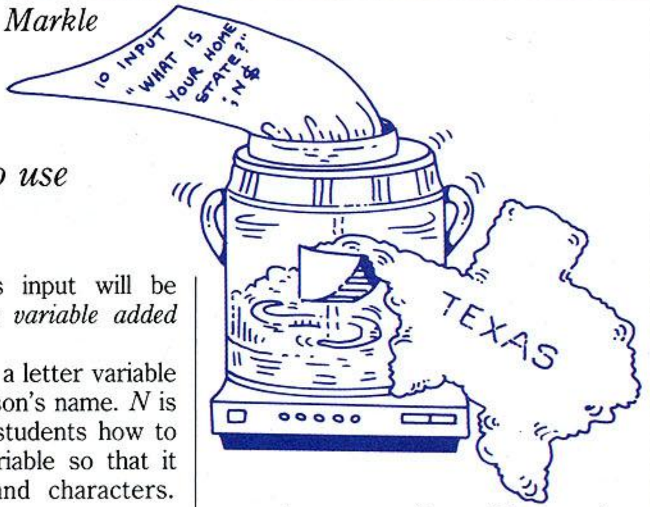
Teacher's Note: The *April* program is for LCSI Logo. See chart, page 60, for command conversions for MIT and TI Logo.

LEARNING CENTER

More on INPUT

By Sandra Markle

This month's column teaches students how to use INPUT with string variables.


10 INPUT "WHAT IS YOUR HOME STATE?";N$
TEXAS

Theresa Anderko

Each month in Learning Center, computer specialist Sandra Markle gives you a programming lesson in BASIC. She provides you with a group lesson plan and four task cards to cut out, laminate, and use in your computer center.

Setting Up

Go to your "Command Post," (bulletin board displaying BASIC commands) and adjust your definition of INPUT to read as follows: INPUT accepts numbers, letters, and symbols from users and assigns them to numeric or string variables.

A Group Lesson

Last month, students used INPUT to assign numbers to variables. These INPUT values are temporarily stored in the computer's memory and recalled for use later in a program.

Students are now ready to use INPUT to handle letters, words, and symbols in the same way.

Show students examples of "computer-personalized" letters you have received. These could include letters asking you to renew a magazine subscription, asking you to vote for a particular politician, or asking you to buy something.

Tell students that, although these letters appear to have been written especially for you, they were not. Using a general program, a computer took the body of a letter that could be sent to a list of people and "personalized" it by inserting a different name and address in the greeting each time it wrote the letter.

To show students how this works, write on the board:

```
PRINT "WHAT IS THE PERSON'S
   NAME?": INPUT
```

Explain that in this example the INPUT command is asking for input in words instead of numbers. Ask students where this input will be stored. *(In a string variable added after the colon.)*

As a class, choose a letter variable to represent the person's name. *N* is a good choice. Ask students how to make *N* a string variable so that it can store letters and characters. *(Add a $.)*

Go back to the program line you wrote on the board. Write N$ after INPUT. Then write this program:

```
NEW
10 PRINT "WHAT IS THE PER-
   SON'S NAME?"
20 INPUT N$
30 PRINT "DEAR";N$;","
40 PRINT "I HAVE AN OFFER
   FOR YOU,";N$;","
50 PRINT "THAT'S TOO GOOD
   TO TURN DOWN."
60 END
```

Have a student type in and RUN the program, entering his or her name in response to the question. Are there any bugs in the program? *(The words run together.)* Remind students that they have to insert spaces when using string variables.

Have the student LIST the program and insert the proper spaces. *(Add a space inside the quotation mark in line 10 after DEAR and inside the quotation mark in line 40, after the first comma.)*

Remind students that in some computers, the INPUT command has an additional power. It can do the PRINT command's job, too. If you have an Apple, Commodore, IBM, or Radio Shack computer, rewrite the first line of the previous program to read:

```
10 INPUT "WHAT IS THE PER-
   SON'S NAME";N$
```

On Radio Shack, IBM, and Commodore computers, this statement will automatically display a question mark when the program is run. Apple computer users will need to insert a question mark in a program listing.

Using the Task Cards

Cut out and laminate this month's four task cards and file them in a box near your computer. Here's a summary of the cards' objectives and answers to the activities:

Task Card #25: Students see if they can add, subtract, multiply, and divide string variables using INPUT. Answer: Only addition works. Challenge: To create spaces between words hooked together, change line 40 to PRINT F$+" "+M$+" "+L$.

Task Card #26: Students use INPUT to put variables and string variables in the same line statement. Students will need a shopping catalog.

Task Card #27: Students replace PRINT statements with INPUT statements. Students will need a supply of 5" x 7" index cards.

Task Card #28: Students practice writing programs with INPUT and string variables.

Editor's Note: Programs in the group lesson and on all four task cards need modifications to run on Atari and TI computers. See chart, page 68, for command conversions. ■

Sandra Markle is the author of several computer books for children, including *Computer Tutor Junior* (Learning Works; Santa Barbara, CA) and *Kid's Computer Capers* (Lothrop, Lee, and Shepard; New York, NY).

LEARNING CENTER TASK CARD

25

STRINGING ALONG

You already know that computers can add, subtract, multiply, and divide variables. But what can they do with string variables? Type in this program:

```
NEW
10 PRINT "WHAT IS YOUR FIRST NAME?":
   INPUT F$
20 PRINT "WHAT IS YOUR MIDDLE
   NAME?": INPUT M$
30 PRINT "WHAT IS YOUR LAST NAME?":
   INPUT L$
40 PRINT F$ + M$ + L$
50 END
```

RUN the program. What happens when you run it? Replace line 40 with each of the following commands and see what happens when you RUN the program.

```
(1) PRINT F$ - M$ - L$
(2) PRINT F$ * M$ * L$
(3) PRINT F$ / M$ / L$
```

Challenge: When you ran the original program, your names were hooked together. Change the program to make a space between each of your names.

LEARNING CENTER TASK CARD

26

CAREFUL SHOPPER

You can use INPUT to put both variables and string variables in the same line statement. Type this program into your computer:

```
NEW
10 PRINT "TYPE IN THE ITEM YOU LIKE
   BEST AND ITS COST.": INPUT A$,Z
20 PRINT "WHAT ARE THE OTHER ITEMS
   AND THEIR COSTS": INPUT B$,Y,C$,X
30 T = Z + Y + X
40 S = T - (X + Y)
50 PRINT "THE TOTAL COST IS $";T
60 PRINT "IF YOU ONLY BUY THE ";A$;",
   YOU WILL SAVE $";S
70 END
```

Look through a shopping catalog. Pick three items to buy.

RUN the program, entering your catalog choices and prices as requested. Round off the total cost of the three items to the nearest whole number and enter it in the program. Do not type a dollar sign in front of the cost.

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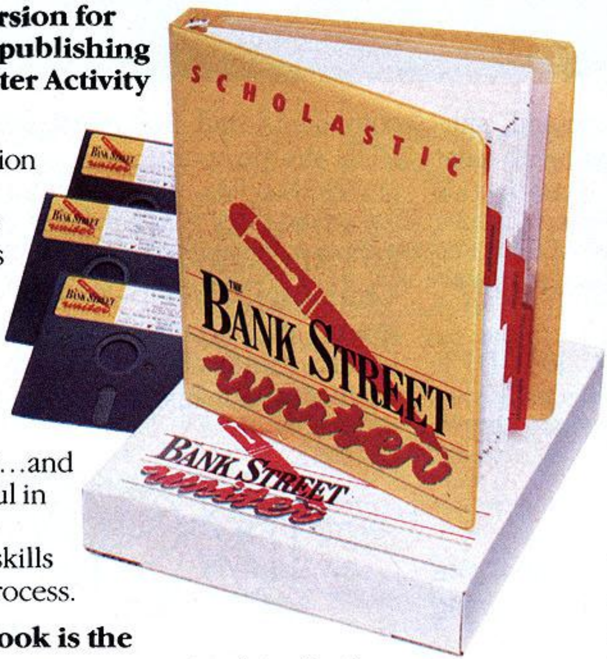

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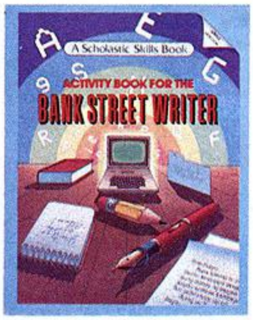

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CIRCLE 26 ON READER SERVICE CARD

LEARNING CENTER TASK CARD

27

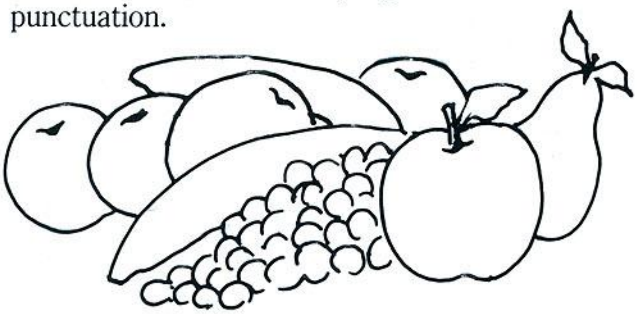
SCRAMBLED NEWS

Type in the following program:

```
NEW
10 PRINT “WHAT IS YOUR FAVORITE FRUIT?”: INPUT F$
20 PRINT “DESCRIBE YOUR BEDROOM IN ONE WORD.”: INPUT A$
30 PRINT “WHO IS YOUR FAVORITE TV STAR?”: INPUT S$
40 PRINT “A UFO SCRAMBLED STATIONS ON THE RADIO.”
50 PRINT “YOU HEARD THAT . . .”
60 PRINT “. . . THE POST OFFICE WILL CHARGE A ”;F$;“ TO MAIL A LETTER . . . . WILL ”;S$;“ RUN FOR PRESIDENT? . . . S$;“ SAID, “;A$;“!”
70 END
```

RUN the program and answer the questions on a index card as they appear on the screen.

Rewrite the program, using INPUT statements in place of the first three PRINT statements. RUN the revised program and check the punctuation.



LEARNING CENTER TASK CARD

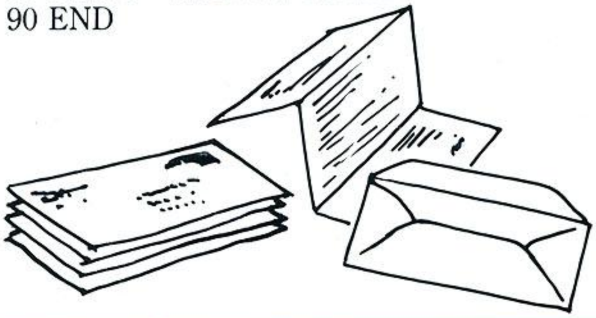
28

COMPUTER PEN PALS

Lucky you! You ran an ad in the paper to find a pen pal and 300 people wrote back. Write a computer program that will help you send a “personalized” letter to each one. The letter should tell about yourself, where you live, and what you like to do.

Here’s a sample program to get you started.

```
NEW
10 PRINT “WHAT IS THE PEN PAL’S NAME?”: INPUT N$
20 PRINT “WHERE DOES ”;N$; “ LIVE?”: INPUT L$
30 PRINT “WHAT’S ON TV?”: INPUT T$
40 PRINT: PRINT “DEAR ”;N$;“,”
50 PRINT “MY NAME IS PETER AND I’M 11 YEARS OLD. HOW”
60 PRINT “ARE THINGS IN ”; L$;“? I’M BUSY WATCHING ”;T$;“ ON TV.”
70 PRINT “YOU ARE MY FAVORITE PEN PAL, ”;N$;“.”
80 PRINT “SIGNED: PETER”
90 END
```



PROGRAM OF THE MONTH

World Ambassador

By Richard Bollinger, Lorraine Hopping, and Dave Kirchner

This social studies program investigates time zones, world geography, and current events.

In *World Ambassador*, students travel to four major cities in the world to meet world leaders, give speeches, act as mediators, and secure general diplomatic relations. Their success as ambassadors depends on their ability to convert time from one zone to another, so that they arrive at scheduled appointments promptly. The *World Ambassador* worksheet (page 46) provides students with a map of the time zones, and helps them keep a record of time calculations.

How the Program Works

Student ambassadors first tell the computer which time zone they live in: eastern, central, mountain, pacific, or Alaska/Hawaii. They enter the present hour in that zone, the minutes, and a.m. or p.m. Then they convert that time to Universal time (time along the prime meridian). If the conversion is correct, they can choose to visit one of four cities to handle diplomatic affairs. If the conversion is incorrect, students must calculate Universal time again.

Upon arrival in a city, student ambassadors convert Universal time to their new local time. If the conversion is incorrect, they miss their meeting with a foreign leader and are encouraged to reschedule another visit to the city. If correct, students help improve relations or solve an international problem. To end the program, children choose the RETURN HOME option on the menu.

Using the Program in Your Social Studies Curriculum

Before playing *World Ambassador*, students must understand how to use time zones to calculate differences in time.

Introduce the concept of time zones by asking students what would happen if it were 1:00 p.m. all around the world. *(Some countries would be completely dark in the middle of the afternoon.)* Explain that time zones were created so that each country would have sunlight during the day hours and darkness during the night hours.

On a world map or on the *World Ambassador* worksheet, point out the *prime meridian*, the imaginary line that runs north to south through Greenwich, England. Explain that if you travel to the right of this line (east), then you *add* one hour for each time zone. If you go to the left (west), then you *subtract* one hour per time zone.

Directly opposite the prime meridian is the international date line, which marks the beginning of a new calendar day. For example, if it is Monday due west (left) of the date line, then it is Sunday east (right) of the line.

Have students compare times in different cities. For example, if it's 5:00 p.m. in Greenwich, England, what time is it in New York City? *(12:00 p.m.)*

Divide students into groups of two or three. Give each student a copy of the *World Ambassador* worksheet, on which they can record time change calculations. Also give each child a vocabulary list they can refer to as they work on the program. The vocabulary list should include the following words:

Time zones: twenty-four sections of the earth, running from north to south. Each time zone represents a one-hour difference in time.

Prime meridian: imaginary line that runs north to south through Greenwich, England.

Universal time: the local time in Greenwich, England, and along the prime meridian. (Also called *Greenwich mean time.*)

International date line: imaginary line opposite the prime meridian, where the next calendar day begins.

Ambassador: a person who travels to foreign countries to represent his or her government.

Noon: 12:00 p.m.

Midnight: 12:00 a.m.

Tell students that the password for entering the *World Ambassador* program is MERIDIAN.

Also remind them that, when telling the computer what time it is, they must enter the hour first, then the minutes, and then a.m. or p.m. Minutes should always be entered as a two-digit numeral such as: 04, 10, 33, 49. □

Program Listing for *World Ambassador*

This program listing is for the Commodore 64 computer. Command conversions for Apple, Atari, PET, Radio Shack, TI, and VIC-20 computers appear in the chart on page 60.

lines 30 to 100
To play the program, students must enter the password (MERIDIAN).

lines 110 to 200
Students indicate what time zone they are in.

lines 210 to 220
Students are asked to enter the present time.

lines 230 to 400
The computer calculates the Universal time by adding 5, 6, 7, 8, or 10 hours to the present time, depending on which time zone (Z) the student is in. It then calculates the time of day in military time (lines 300 and 305) and compares the student's answer (in standard time) with the correct Universal time (lines 380 to 400).

lines 500 to 720
Students choose a city to visit. Line 720 sends them to the appropriate section of the program.

lines 2000 to 5140
In each city, the computer asks students to calculate the local time, plus the number of hours until meeting time. It then calculates the correct answer by setting the variable *A* equal to the number of hours to add or subtract. Using that value for *A*, the computer goes to the 30000 sub-

(continued)

```
5 PRINT CHR$ (147)
10 PRINT "TYPE YOUR LAST NAME AND PRESS RETURN.":PRINT:INPUT N$
20 PRINT:PRINT "   WELCOME, AMBASSADOR ";N$;".":PRINT
30 PRINT "FOR SECURITY CLEARANCE, ENTER THE "
40 PRINT "PASSWORD AND PRESS RETURN.":INPUT P$
50 IF P$<>"MERIDIAN" THEN PRINT:PRINT "SORRY, WRONG PASSWORD":GOTO 30
100 PRINT CHR$ (147)
110 PRINT "   WHAT TIME ZONE ARE YOU IN?"
130 PRINT:PRINT "    1  EASTERN"
140 PRINT "   2  CENTRAL"
150 PRINT "   3  MOUNTAIN"
160 PRINT "   4  PACIFIC"
170 PRINT "   5  ALASKA/HAWAII"
180 PRINT:PRINT "ENTER THE NUMBER OF YOUR CHOICE AND"
190 PRINT "PRESS RETURN.";:INPUT Z
200 PRINT CHR$ (147)
210 PRINT "WHEN ENTERING TIME, MIDNIGHT TO 11:59"
212 PRINT "IN THE MORNING IS 'A.M.' AND NOON TO"
214 PRINT "11:59 AT NIGHT IS 'P.M.' .":PRINT:PRINT
220 PRINT:PRINT "WHAT TIME IS IT WHERE YOU ARE?":GOSUB 20000
230 UM=M:UM$=M$:ON Z GOTO 240,250,260,270,280
240 UH=H+5:GOTO 290
250 UH=H+6:GOTO 290
260 UH=H+7:GOTO 290
270 UH=H+8:GOTO 290
280 UH=H+10
290 IF UH>=24 THEN UH=UH-24
300 IF UH<12 THEN LX=UH:T$=" A.M.":GOTO 307
305 LX=UH-12:T$=" P.M."
307 IF LX=0 THEN LX=12
310 H$=STR$(LX):UT$=H$+":"+M$+T$
320 PRINT CHR$ (147)
330 PRINT "IF IT IS ";T1$;" WHERE YOU ARE,"
340 PRINT "WHAT IS THE UNIVERSAL TIME?":GOSUB 20000
380 IF UH=H AND UM=M THEN 400
390 PRINT:PRINT "NEGATIVE. UNIVERSAL TIME IS ";UT$:GOTO 220
400 PRINT:PRINT "AFFIRMATIVE. UNIVERSAL TIME IS ":PRINT T1$:UT$=T1$
410 PRINT:PRINT "YOU ARE NOW READY FOR YOUR FIRST"
415 PRINT "ASSIGNMENT, AMBASSADOR ";N$;"."
420 PRINT:PRINT "PLEASE PRESS RETURN.";:INPUT Z$
430 PRINT CHR$ (147)
500 PRINT "   WHAT CITY WOULD YOU LIKE TO VISIT, "
510 PRINT "AMBASSADOR ";N$;"?"
520 PRINT:PRINT "   1   BUENOS AIRES, ARGENTINA"
530 PRINT "   2   ROME, ITALY"
540 PRINT "   3   TOKYO, JAPAN"
550 PRINT "   4   MOSCOW, USSR"
560 PRINT "   5   RETURN HOME"
700 PRINT:PRINT "ENTER THE NUMBER OF YOUR CHOICE.":INPUT C
710 PRINT CHR$ (147)
720 ON C GOTO 2000,3000,4000,5000,9000
730 GOTO 430
2000 PRINT "WELCOME TO BUENOS AIRES, AMBASSADOR"
2010 PRINT N$;". UNIVERSAL TIME IS ";UT$
2020 PRINT:PRINT "YOU MEET WITH PRESIDENT ALFONSIN"
2030 PRINT "IMMEDIATELY TO HELP ARGENTINA AND"
2040 PRINT "ENGLAND REACH AN AGREEMENT OVER THE"
2050 PRINT "FALKLAND/MALVINAS ISLANDS."
2055 PRINT:PRINT "WHAT TIME IS IT LOCALLY?"
2060 GOSUB 20000:A=-3:GOSUB 30000
2090 IF LH=H AND UM=M THEN 2140
2100 PRINT "YOU MISSED THE MEETING. IT WAS AT"
2110 PRINT LT$;" THE DISPUTE BETWEEN"
2120 PRINT "ARGENTINA AND ENGLAND HAS NOT BEEN"
2130 PRINT "SETTLED.":GOTO 420
2140 PRINT "YOUR MEETING WAS A SUCCESS. ARGENTINA"
2150 PRINT "AND ENGLAND HAVE REACHED AN AGREEMENT.":GOTO 420
3000 PRINT "   WELCOME TO ROME, AMBASSADOR "
```

PROGRAM OF THE MONTH

(continued from page 43)

routine to figure out the time of day. Once it has calculated the local time, the computer compares the student's answer with the correct answer (lines 2090, 3070, 4100, and 5080).

lines 9000 to 9020

If students select the RETURN HOME option, the program ends.

lines 20000 to 20110

In this subroutine, the computer asks the student for the time in hours (H$), minutes (M$), and time of day (T$). The variable T1$ (line 20060) combines these time elements into a specific time, such as 5:10 p.m.

lines 30000 to 30040

The computer calculates the correct time using military notation. The variable *A* stands for the number of hours to add or subtract. Lines 30010 and 30020 check for time of day (a.m. or p.m.). Line 30040 changes the computer's military notation back into standard time.

Richard Bollinger teaches gifted science students at P.S. 85, District 10, Bronx, New York. ***Lorraine Hopping*** is assistant editor for *Teaching and Computers*. ***Dave Kirchner*** teaches a course called "Computers for Kids" in the Denver, Colorado, School District.

```
3010 PRINT N$;". POPE JOHN PAUL HAS BEEN"
3020 PRINT "WAITING FOR YOU. UNIVERSAL TIME IS"
3030 PRINT UT$
3040 PRINT:PRINT "YOUR MEETING WITH THE POPE BEGINS IN"
3050 PRINT "EXACTLY TWO HOURS. WHAT TIME WILL IT"
3060 PRINT "BE LOCALLY?"
3070 GOSUB 20000:A=3:GOSUB 30000
3100 IF LH=H AND UM=M THEN 3150
3110 PRINT "YOU MISSED THE MEETING AND OFFENDED"
3120 PRINT "THE POPE. IT WAS SCHEDULED FOR"
3130 PRINT LT$;" TRY TO RESCHEDULE"
3140 PRINT "THE MEETING DURING YOUR NEXT VISIT.":GOTO 420
3150 PRINT "YOU HAVE ESTABLISHED GOOD RELATIONS"
3160 PRINT "WITH THE VATICAN.":GOTO 420
4000 PRINT "   WELCOME TO TOKYO, AMBASSADOR "
4010 PRINT N$;". EMPEROR HIROHITO HAS"
4020 PRINT "SCHEDULED A TOUR OF AN AUTO"
4030 PRINT "ASSEMBLY PLANT WHICH IS 87 PERCENT"
4040 PRINT "AUTOMATED . THE TOUR WILL START IN ONE"
4050 PRINT "HOUR. UNIVERSAL TIME IS ";UT$
4060 PRINT:PRINT "WHAT TIME WILL IT BE LOCALLY?"
4070 GOSUB 20000:A=10:GOSUB 30000
4100 IF LH=H AND UM=M THEN 4150
4110 PRINT "THE TOUR WAS CANCELLED BECAUSE YOU"
4120 PRINT "FAILED TO SHOW UP AT ";LT$
4130 PRINT "TRY TO RESCHEDULE ANOTHER TOUR ON YOUR"
4140 PRINT "NEXT VISIT TO TOKYO.": GOTO 420
4150 PRINT "YOU LEARNED A GREAT DEAL ABOUT THE USE"
4160 PRINT "OF ROBOTS IN INDUSTRY. EMPEROR"
4170 PRINT "HIROHITO HAS AGREED TO CURB EXPORTS"
4180 PRINT "TO THE U.S.":GOTO 420
5000 PRINT "   WELCOME TO MOSCOW, AMBASSADOR"
5010 PRINT N$;". UNIVERSAL TIME IS ";UT$
5020 PRINT "YOU WILL BE GIVING A TALK ON US/USSR"
5030 PRINT "RELATIONS AT THE UNIVERSITY IN EXACTLY"
5040 PRINT "14 HOURS. WHAT TIME WILL IT BE?"
5050 GOSUB 20000:A=17:GOSUB 30000
5080 IF LH=H AND UM=M THEN 5130
5090 PRINT "YOU MISSED YOUR OPPORTUNITY TO SPEAK"
5100 PRINT "AT THE UNIVERSITY. IT WAS SCHEDULED FOR"
5110 PRINT LT$;" TRY AGAIN ON YOUR NEXT"
5120 PRINT "VISIT TO MOSCOW.":GOTO 420
5130 PRINT "YOUR TALK WENT WELL. YOU HAVE HELPED"
5140 PRINT "IMPROVE US/USSR RELATIONS.":GOTO 420
9000 PRINT "   WELCOME HOME, AMBASSADOR"
9010 PRINT N$;". I HOPE YOU HAVE HAD"
9020 PRINT "A PLEASANT TRIP.":END
20000 PRINT:PRINT "ENTER THE HOUR      ";:INPUT H$:H=VAL(H$)
20005 IF H=12 THEN H=0
20010 PRINT "ENTER THE MINUTES   ";:INPUT M$:M=VAL(M$)
20020 PRINT "ENTER A.M. OR P.M. ";:INPUT T$
20030 IF T$="A.M." THEN 20060
20040 IF T$="P.M." THEN H=H+12:GOTO 20060
20050 GOTO 20020
20060 T1$=H$+":"+M$+" "+T$
20070 PRINT:PRINT "IS ";T1$;" CORRECT ?"
20080 PRINT "ENTER YES OR NO ";:INPUT A$
20090 IF A$="NO" OR A$="N" THEN 20000
20100 IF A$<>"YES" AND A$<>"Y" THEN 20080
20110 PRINT:RETURN
30000 LH=UH+A:IF LH>=24 THEN LH=LH-24
30005 IF LH<0 THEN LH=LH+24
30010 IF LH<12 THEN LX$=" A.M.":LX=LH:GOTO 30030
30020 LX$=" P.M.":LX=LH-12
30030 IF LX=0 THEN LX=12
30040 LH$=STR$(LX):LT$=LH$+":"+UM$+LX$:RETURN
```

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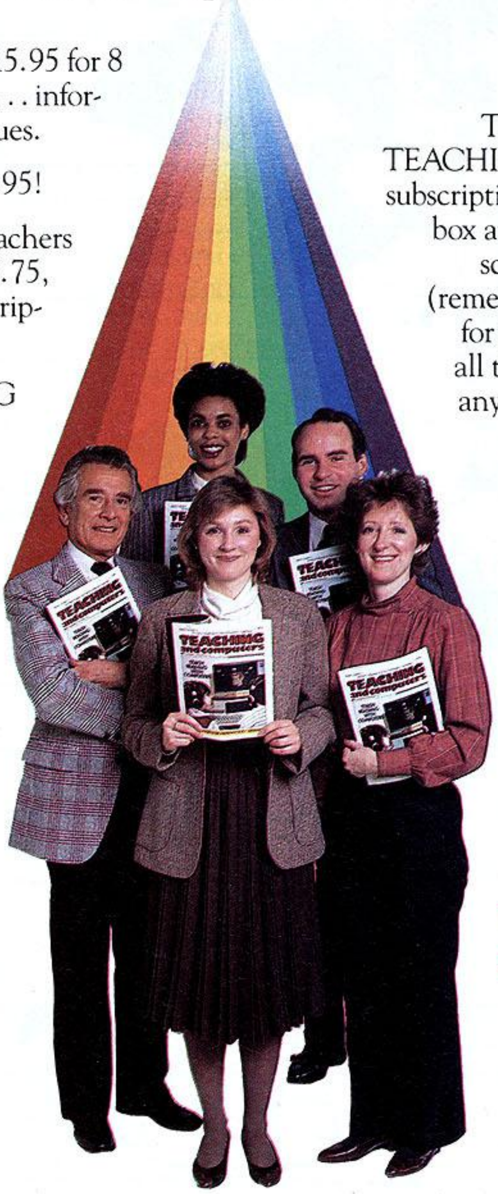

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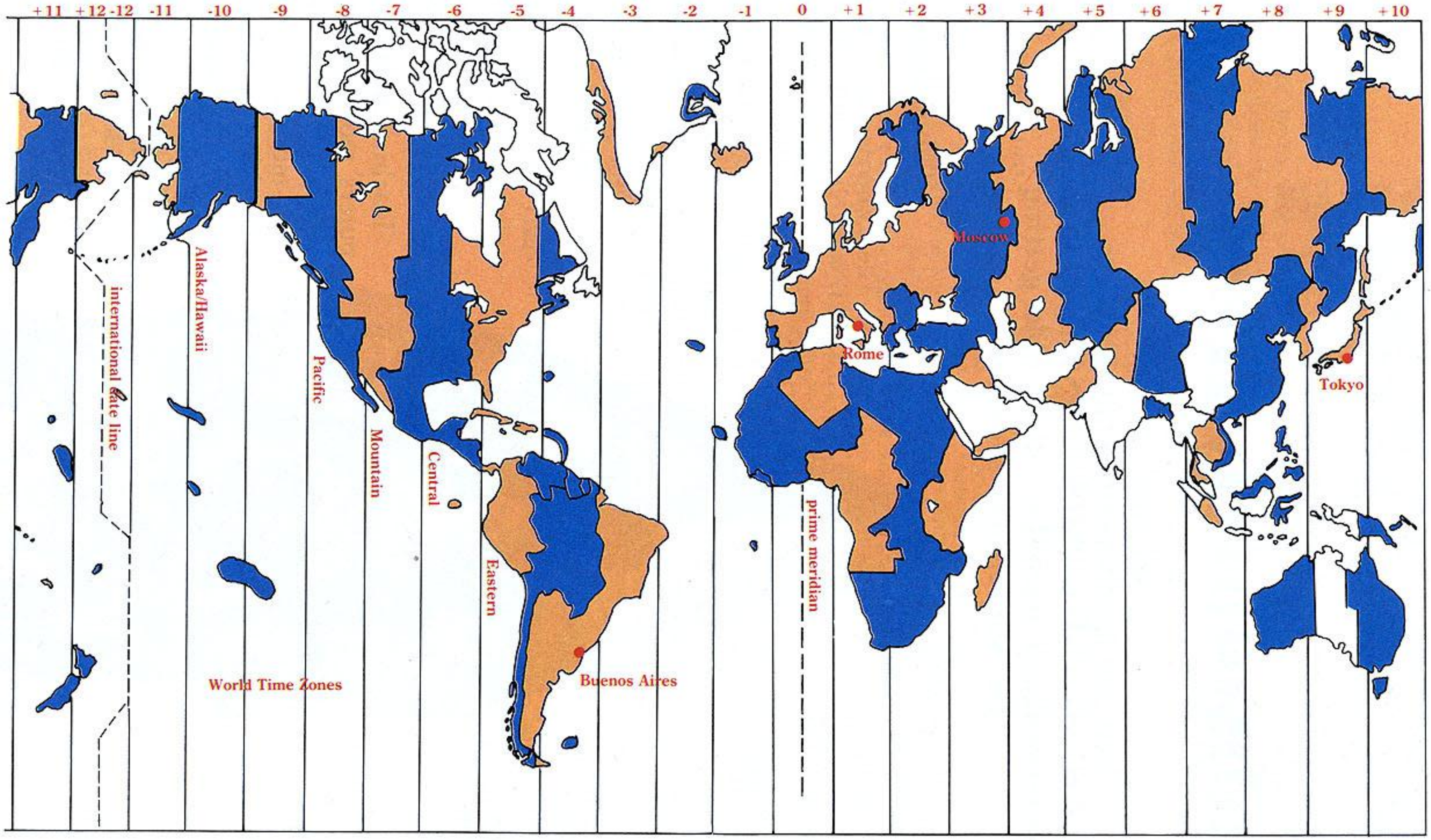
WORLD AMBASSADOR WORKSHEET

Ambassador: ____________________


+11
+12
-12
-11
-10
-9
-8
-7
-6
-5
-4
-3
-2
-1
0
+1
+2
+3
+4
+5
+6
+7
+8
+9
+10
international date line
Alaska/Hawaii
Pacific
Mountain
Central
Eastern
World Time Zones
Buenos Aires
prime meridian
Rome
Moscow
Tokyo

Worksheet Directions: Fill out the following chart as you play the *World Ambassador* program. Some blanks have both a.m. and p.m. after them. Circle one. Some blanks have both + and - before them. Circle one.

Your time zone:
Present time: ____________ a.m. or p.m.
Universal time: ____________ a.m. or p.m.

1. Buenos Aires
Time difference: + or - ______ hours
Meeting time: + __0__ hours
Local time: ______ a.m. or p.m.

2. Rome
Time difference: + or - ______ hours
Meeting time: + __2__ hours
Local time: ______ a.m. or p.m.

3. Tokyo
Time difference: + or - ______ hours
Meeting time: + __1__ hour
Local time: ______ a.m. or p.m.

4. Moscow
Time difference: + or - ______ hours
Meeting time: + ______ hours
Local time: __14__ a.m. or p.m.

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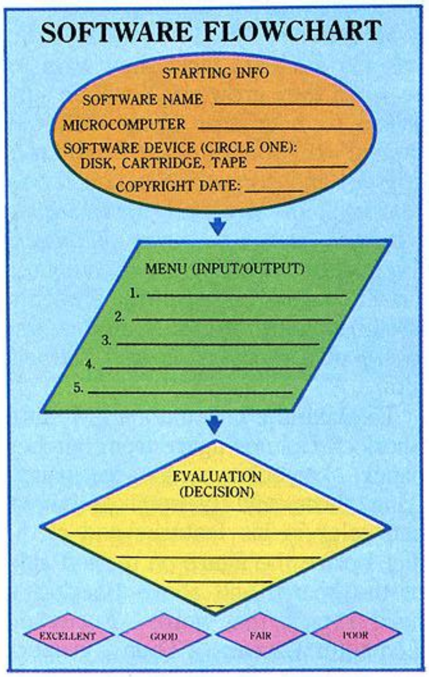
MICRO IDEAS

Quick Computer Tips and Activities



Evaluate Software with Flowcharts

I have designed a flowchart grid for my second graders to complete as they try out new software programs. The grids encourage students to use each new program thoroughly, and they give kids practice making flowcharts.

Children "START" a software flowchart (see illustration of grid) by listing general data about a program inside a start-stop oval.

As the child uses the program, he or she lists its menu, and gives a brief description of the program. This information goes in a parallelogram, a flowchart symbol used to represent computer input and output.

The student then makes decisions about the software: whether it is good or bad; whether he or she would recommend it to others. That info goes inside a decision symbol (diamond).

The kids love to compare and share reviews with their classmates. ☐

Peggy Hare
Meriden, KS

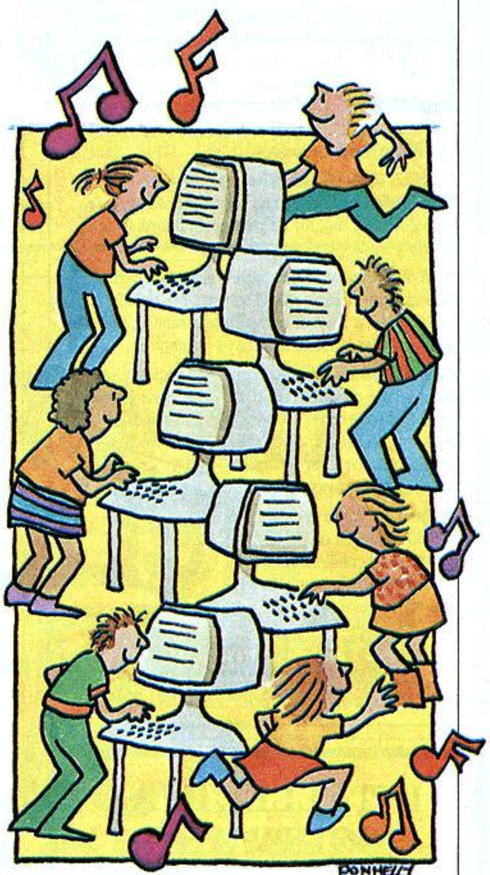
Play Musical Typewriters

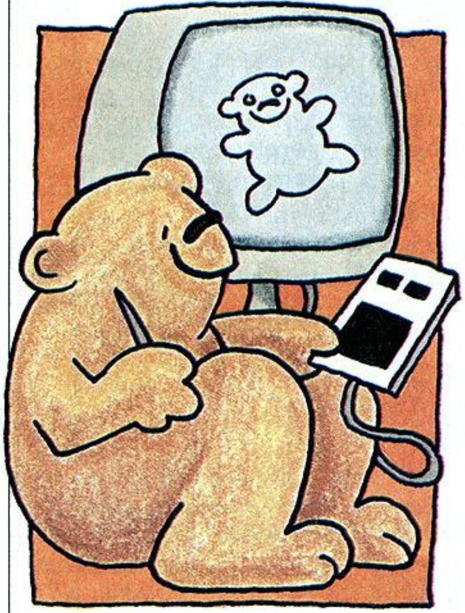
To give small groups of students typing practice, play Musical Typewriters. This game is more than just a typing drill; it's also an excellent creative writing activity.

To begin, have each student type the opening to an original story. While students are typing, play some music. About 10 minutes later, stop the music and instruct students to quit typing, leave their papers in the typewriters, and move on to a different machine. At the new typewriters, they should read the stories briefly, and type in continuations of the stories. Every time you stop the music, kids are to follow this process. When everyone has typed on all the machines, tell students to return to their original typewriters, read the interesting twists their stories have taken, and type an ending that suits the rest of the story.

Before beginning the game, I always write a few story suggestions on the chalkboard. Here are possible titles for this month: "The April Fools' Joke that Backfired," "A Visit with the Easter Bunny," and "Spring Is My Favorite Time of Year." ☐

Mary Ellen Switzer
Del Mar, CA





Illustrate Your Story Hour

Our school has recently purchased a Koala Pad, a pad that plugs into a microcomputer and transfers drawings that you produce on the pad with your finger or stylus onto a monitor.

The pad has become a big hit with many primary classes during story hour. As a teacher reads a story, students are selected to use the Koala Pad to draw a series of illustrations about the story on the computer screen. When the story is finished, the illustrations contain many important elements of the tale. This serves as a good discussion springboard. ☐

Thomas Boudrot
Alief, TX

(continued)

Liza Donnelly

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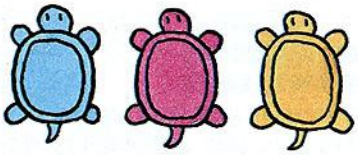
CIRCLE 18 ON READER SERVICE CARD

MICRO IDEAS
(continued)



Quick Tips

- Stickers of turtles are available at most stationery stores. Stick them on outstanding Logo printouts.

Rita McMinn

- Make a class dictionary of computer terms. Each day, introduce a new computer term and instruct a student to jot the word and definition in a notebook.

Polly Tafrate

Average Grades with this Program

Here's a BASIC program for the Apple computer that is a big help at the end of the quarter, when it is time to compute grades.

Because of absences, extra credit assignments, and enrichment projects, my students do not always have the same number of grades. This program averages the number of grades that I input, so I don't have to spend time counting grades for each student.

```
10 HOME
20 PRINT "ENTER GRADES.
   WHEN LAST GRADE HAS
   BEEN ENTERED, ENTER 200
   AS NEXT GRADE."
30 PRINT "THE AVERAGE WILL
   BE CALCULATED"
40 LET T = 0: LET C = 0
50 PRINT "GRADE": INPUT G
60 IF G = 200 THEN PRINT "THE
   AVERAGE IS "T / C: PRINT :
   PRINT : GOTO 40
70 LET T = T + G
80 LET C = C + 1
90 GOTO 50
```

(To convert this program for use on other major microcomputers, see Conversion Chart, page 60.) □

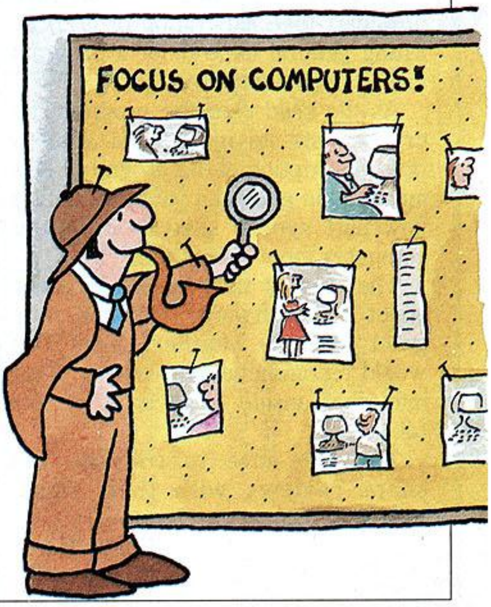
Barbara Devir
Peekskill, NY

Investigate Computer Careers

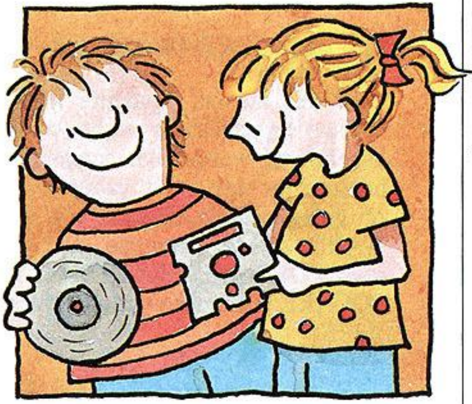
Ask my students what they want to be when they grow up. You'll be surprised to hear that along with the typical responses — *fire fighter, dancer,* and *astronaut* — you'll also hear *computer architect, systems analyst,* and *software project manager.* Ever since we designed a computer career bulletin board, my students have become more interested in and aware of computers as part of their future.

To make the bulletin board, I cut a Sherlock Holmes figure from butcher paper — complete with cape, magnifying glass, and deerstalker hat — and color in his features and clothing. I place the figure on the left side of the board, and above Sherlock's head I tack the words "Focus on Computer Careers." Then I instruct my students to cut pictures from magazines of people using computers in their work. Students attach the pictures to the board. Every week we choose one picture to discuss. We identify the career depicted and talk about the job responsibilities a person in such a career has. □

Diane Taylor
Evansville, IL


FOCUS ON COMPUTERS!

MICRO IDEAS



Disks and records store information.

Demonstrate Disk Drives Using Records

A 45 RPM record is a great tool to use when explaining how a disk stores and retrieves information.

Introduce the record as a disk. Explain that the record and the disk perform the same function — they store information. A record player acts like the disk drive; it retrieves information on the record. Speakers let the information on the records be heard. Sometimes speakers on a computer let information on the disk be heard, but information is usually converted into a visual form that can be seen on a monitor or printer.

The bands on the record are good representations of the sectors on a disk. The bands separate the songs from one another; the sectors hold groups of information available on the disk. ■

Leigh E. Zeitz
Whittier, CA

Send Us Your Micro Ideas

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CIRCLE 20 ON READER SERVICE CARD

LOGO NOTEBOOK

LESSON SEVEN: Variables

By Steve Tipps and Tom Lough

In previous lessons of Logo Notebook, students wrote a set of commands that produced geometric figures. For example, here's a procedure to create a square:

```
TO SQUARE
   REPEAT 4 [FD 20 RT 90]
END
```

To make a bigger or smaller square, students wrote new procedures. For example, a bigger square might be:

```
TO SQUARE.50
   REPEAT 4 [FD 50 RT 90]
END
```

As students wrote more square procedures, they discovered that the only difference in their procedures is the number after FORWARD. In the first example, the turtle went forward 20 paces; in the second example, it went forward 50 paces. Numbers, like 20 and 50, that tell the turtle how far to go forward, go back, turn right, or turn left, are called *input values.*

In this lesson, students learn to replace input values with *variables,* letters and words that act as placeholders for any input value. Instead of going FORWARD 50 or FORWARD 20, for example, the turtle goes FORWARD :SIZE. Here is the SQUARE procedure with the variable :SIZE.

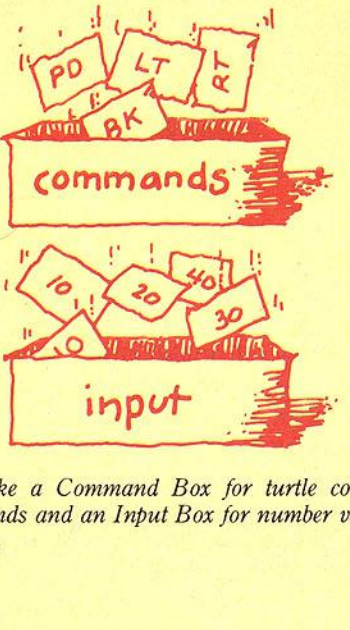
```
TO SQUARE :SIZE
   REPEAT 4 [FD :SIZE RT 90]
END
```

By substituting different input values for :SIZE, students can use one standard SQUARE procedure to create squares of any size.

In this lesson students will learn to write procedures that use variables. They will also learn how different input values for variables affect the turtle's action.

---

1. At the Races



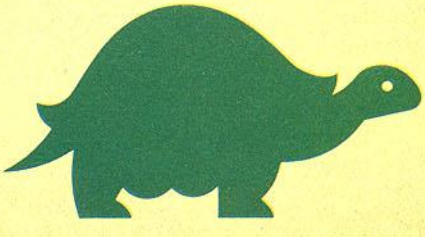
Make a Command Box for turtle commands and an Input Box for number values.

Objective: Students use different input values with FORWARD, BACK, RIGHT, and LEFT commands.

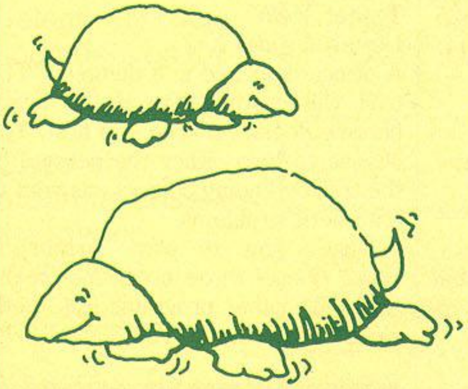
Activity: Write FORWARD, BACK, RIGHT, and LEFT on separate index cards and drop them in a box labeled Command Box. Write the numerals 10, 20, 30, 40, 50, 60, 70, 80, and 90 on separate index cards and drop them in a box labeled Input Box. Using chalk, draw a large circle, 15 to 30 feet in diameter. (The more students who are participating, the bigger the circle will have to be.)

Tell children to stand in the center of the circle. Pass the two boxes around and allow each person to choose a command card and an input card at random from each box. If, for example, a student selects the command FORWARD and the input 30, he or she takes 30 turtle steps (three human steps) forward. Explain that 10 turtle steps equal one human step. The object of the game is to be one of the first "turtles" out of the circle. Continue to pass the two boxes around until everyone has drawn enough cards to step outside of the circle.

Extension: Students can play a modified version of At the Races on the computer. The turtle starts in the center of the screen. Students take turns drawing command and input cards and typing the results into the computer. The object this time is to keep the turtle from going out-of-bounds. The student who enters the final command to drive the turtle out-of-bounds begins a new round of At the Races.



2. Step, Skitter, Hop



Students can make the turtle SKITTER any distance by using one procedure with a variable.

Objective: Students create Logo procedures that contain variables.

Activity: Write this procedure on the board:

```
TO SKITTER
   PU FD 30 BK 10
END
```

Ask students how they would change the SKITTER procedure to make someone jump forward farther. *(They would have to write a new procedure with a bigger input value after FD.)* Wouldn't it be easier to use one SKITTER procedure and just change the input values for FORWARD and BACK by drawing different cards from the Input Box?

Pick a few cards at random from the Input Box and substitute the values, one at a time, for 30 in the SKITTER procedure. Have a student volunteer "skitter" using each new input.

Next, replace whatever value that follows FORWARD with the word :STEPS. Explain that :STEPS takes the place of any number. Because the number can change or vary, :STEPS is called a *variable.*

In Logo, a variable is always preceded by a colon. The colon tells the computer to expect an input value for STEPS.

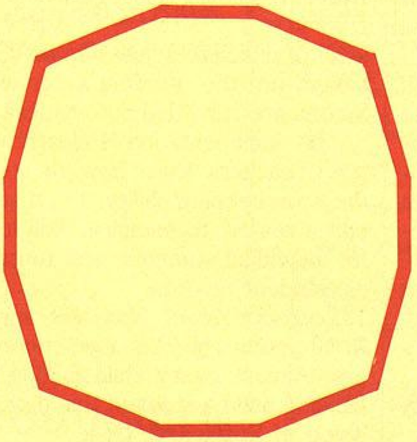
Also, students must remember to include the variable name in the title of the procedure. Here's the final SKITTER procedure:

```
TO SKITTER :STEPS
   PU FD :STEPS BK 10
END
```

To make the turtle skitter on the screen, type in the procedure name and the value for :STEPS, as in SKITTER 20.

---

3. Much Ado About Anything



The ANYTHING :MUCH procedure creates different-sized shapes by accepting various input values for each command.

Objective: Students enter different input values into the same procedure.

Activity: Write these procedures on the board:

```
TO ANYTHING1 :MUCH
   REPEAT 40 [BK :MUCH LT 30]
END

TO ANYTHING2 :MUCH
   REPEAT 40 [FD 30 LT :MUCH]
END

TO ANYTHING3 :MUCH
   REPEAT :MUCH [FD 30 RT 30]
END

TO ANYTHING4 :MUCH
   REPEAT :MUCH [BK :MUCH
RT :MUCH]
END
```

In the first example, the variable :MUCH replaces an input value for BACK; in the second example, it replaces a value for LEFT; in the third example, it replaces a value for REPEAT; and in the last example, it replaces a value for all commands.

Have students run each procedure several times, entering different input values each time. They will discover that an input to move FORWARD or BACK determines size; an input to turn RIGHT or LEFT determines shape; and an input to REPEAT determines the number of repeated actions.

Students can use this discovery to help them choose good variable names. For example, variable names for FORWARD and BACK inputs could include :SIZE, :SIDE, or :DISTANCE. For LEFT and RIGHT inputs, variables names are often :ANGLE and :TURN. And for REPEAT, good names are :NUMBER or :TIMES.

Extension: Have students convert procedures for squares, triangles, circles, and rectangles into single procedures that allow them to create a shape of any size. For example:

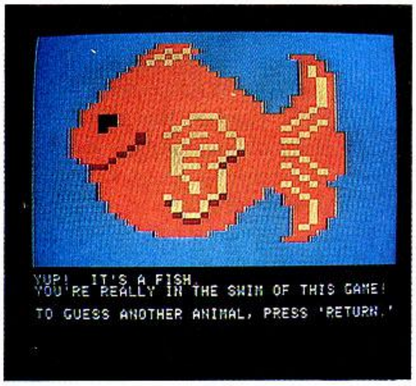
```
TO SQUARE :SIZE
   REPEAT 4 [FORWARD :SIZE
LEFT 90]
END
```

(Note that a rectangle procedure will require two variables, perhaps :SIDE1 and :SIDE2.)

Until next time, FORWARD 100! ■

SOFTWARE SHOWCASE

Software Recommended for Teachers by Teachers



```
YUP!  IT'S A FISH.
YOU'RE REALLY IN THE SWIM OF THIS GAME!
TO GUESS ANOTHER ANIMAL, PRESS 'RETURN.'
```

A player correctly identifies a fish in "Instant Zoo."

Instant Zoo

Computer: *Apple*
Topic: *Language Arts*
Level: *Grades 2–5*

What's that appearing on your screen? A fish? The child types in "fish."

"Yup! It's a fish," the program replies. "You're really in the swim of this game."

The challenge of "Instant Zoo" is to identify animals when you can only see part of them on the screen. There are three other programs on the disk. "Star Watch" measures how fast children can report (by pressing the ESCAPE key) a shooting star in the sky. In "Quick Match," children must decide whether paired words are the same or different. "Scramble" asks kids to unscramble mixed-up words. The letters wear sneakers, and points are scored for speed.

A "Word Editor" lets teachers create their own lists of words to be used with "Quick Match" and "Scramble." The manual is easy to read and provides additional classroom activity ideas.

This program has proven useful with my primary students. As they work with "Instant Zoo" and "Star Watch," their attention spans increase. The other games are highly motivational and give needed spelling and decoding practice.

Type of Software: Disk
Price: $50
Policy: Backup included; preview through dealers
Source: Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014; (408) 996-1010. ☐

Sue Ridgley
Reading Teacher
Macon Grade School
Macon, IL

Alphabet Keyboard

Computer: *TRS-80, Models I and III*
Topic: *Language Arts*
Level: *Grades K–1*

Alphabet Keyboard teaches the location of letters on the keyboard. Students must find and type letters in alphabetical order.

Correct answers signal happy faces. The program will not progress until a correct response is given. At the end of each exercise, a summary report appears. The documentation is simple and merely describes the material covered in the program.

This program makes an excellent introduction to the computer for young children. Teaching the keyboard to young children makes a great deal of sense, because the skills used, such as recognition of upper- and lowercase letters, knowledge of the alphabet, and one-to-one correspondence, are part of the reading and writing curriculum at this level. For short-range reinforcement of reading and writing skills and long-term preparation for typing, this program can't be beat.

Type of Software: 48K disk, 16K cassette
Price: $49.50
Policy: 30-day preview
Source: Random House Microcomputer Software, 2400 Hahn Rd., Westminster, MD 21157; (301) 876-2280. ☐

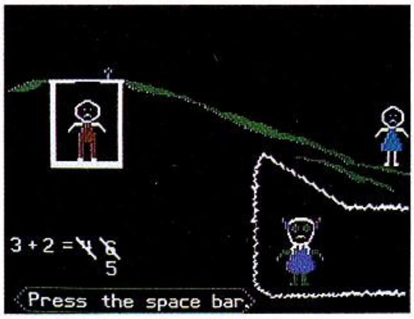
Barbara Devir
Sixth Grade Teacher
Woodside School
Peekskill, NY

Learning About Numbers Volume 1

Computer: *Apple*
Topic: *Math*
Level: *Grades K–3*

A prince is locked in a dungeon. The troll will capture him if the brave heroine doesn't rescue him first. You choose to help either the heroine or the troll by finding correct answers to arithmetic problems.

That's how to play "Arithmetic Fun," one of three programs on the disk. The other programs are "Let's Count" and "Let's Tell Time." The level of difficulty adjusts up or down, based on the student's answers. Scores are recorded automatically.



Kids like Learning About Numbers.

The documentation is clearly written. Teachers learn how to control the scorekeeping ability, to create or edit a roster, to establish skill levels for individual students, and to examine student records.

Learning About Numbers appeals to all young children, even nonreaders. Almost every child in our K–3 building used and loved this disk.

Type of Software: Disk
Price: $40
Policy: $10 backup; 30-day, money-back guarantee
Source: C & C Software, 5713 Kentford Circle, Wichita, KS 67220; (316) 683-6056. ☐

David Fiday
Media Director
Laraway District 70-C
Joliet, IL

For more information about the products and services advertised in this issue...

1 Selectively circle the numbers on the reply card.

2 Check the appropriate answers to the reader classification questions.

3 Be sure to fill in your name, school, and address. *(Incomplete information will void the card.)*

4 Tear out reply card and mail promptly. Cards postmarked after expiration date cannot be processed.

TEACHING and computers

April 1984
(Expires June 1)
READER SERVICE CARD

Please circle an entry for each category.

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- ☐ c. Junior High
- ☐ d. Senior High
- ☐ e. Junior/Senior
- ☐ f. College
- ☐ g. District
- ☐ h. State
- ☐ i. Federal/National
- ☐ j. Other

II. Your primary job (check one)
- ☐ 1. Administrative (including Superintendent/Principal)
- ☐ 2. Teaching (including Department Head)
- ☐ 3. Evaluation/Purchasing
- ☐ 4. Curriculum Development
- ☐ 5. Media Specialist/Librarian
- ☐ 6. Other

III. What is your primary involvement with computers?
- ☐ a. Actively use computers
- ☐ b. Recommend type/brand
- ☐ c. Approve purchase
- ☐ d. General interest
- ☐ e. All of the above

IV. Your school or district's investment in electronic learning materials.
- ☐ 1. Increasing
- ☐ 2. Decreasing
- ☐ 3. No Change

V. In which area does your school or district use computers? (check one)
- ☐ a. Interdisciplinary (elementary classroom)
- ☐ b. Math
- ☐ c. Reading
- ☐ d. Science
- ☐ e. Business/Vocational Education
- ☐ f. Computer Sciences
- ☐ g. Social Sciences
- ☐ h. English/Language Arts
- ☐ i. Other

VI. How does your school or district use computers?
- ☐ 1. Primarily for administrative purposes
- ☐ 2. Primarily for instructional purposes

VII. What type of software has your school/district purchased in the past year?
- ☐ a. Curriculum-based courseware
- ☐ b. Fun/Learning software
- ☐ c. Word Processing
- ☐ d. Utility
- ☐ e. Programming

VIII. Your school/district enrollment
- ☐ 1. Under 300
- ☐ 2. 300–499
- ☐ 3. 500–999
- ☐ 4. 1000–4999
- ☐ 5. 5000–9999
- ☐ 6. 10,000–24,000
- ☐ 7. 25,000 +

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Name

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TEACHING and computers

April 1984
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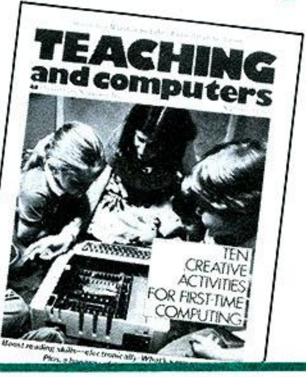

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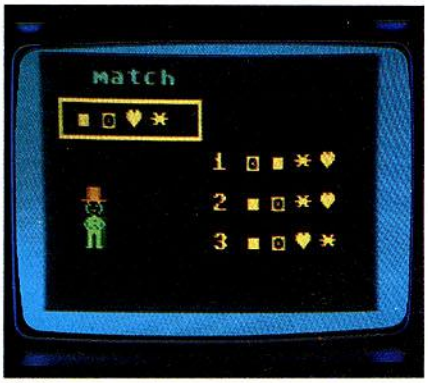
SOFTWARE SHOWCASE



Kindercomp *players match patterns.*

Kindercomp

Computer: *Commodore 64, Atari, IBM PC, Apple*
Topic: *Language Arts*
Level: *Preschool–Grade 2*

Kindercomp combines six learning games that develop letter, number, and pattern recognition, keyboard familiarity, and creativity.

Touch any key and the character repeats itself across the screen in "Scribble." Another game, "Names," duplicates any 15-character phrase in a variety of colors and patterns. "Draw" helps the child make colorful designs with the joystick or keyboard. The other games challenge the child to match letters and numbers and to find numerical sequences.

The programs in *Kindercomp* provide reinforcement for beginning readers. The graphics, animation, and sound are highly entertaining.

Because the program lacks clear directions, it requires explanation by the teacher.

Type of Software: Cartridge for Atari and Commodore; disk for all
Price: $29.95
Policy: $5 backup; 30-day free replacement
Source: Spinnaker, 215 First St., Cambridge, MA 02142; (617) 868-4700. ☐

Susan Bjork
Preschool Teacher
St. Anne's-Belfield Preschool
Charlottesville, VA

Master Match

Computer: *Commodore 64, IBM PC, Apple*
Topic: *Authoring program*
Level: *Preschool–Adult*

Like "The Match Game" on television, *Master Match* presents a game board with numbered boxes. The object is to match information in one box to information in another box. Matches can be made between a word and its definition, a word and its picture, or a math problem and its answer.

Master Match comes with several game topics, like animal sounds, opposite words in Spanish, and U.S. geography. But the best part is its easy authoring system that allows you to create your own subject areas using pictures, concepts, and words.

The manual is easy to understand and very helpful. It describes how to create a quiz for one or two students in step-by-step detail. It also explains how to type foreign words, highlight words, or create pictures with an alternate character set. A helpful chart is on page 19 of the manual.

At the primary level, students can play a game of directions using words or arrows. Older students can match anything from measurements (four quarts to one gallon) to quotes from books read in class. Disks in foreign languages, science and other subject areas can be purchased, too. But it's more fun to create your own quizzes to match your curriculum.

Type of Software: Disk
Price: $39.95
Policy: Send in warranty card for free backup.
Source: Computer Advanced Ideas, 1442-A Walnut Street, Suite 341, Berkeley, CA 94709; (415) 526-9100. ☐

Ann Dana
Microcomputer Consultant
Hinsdale Junior High School
Hinsdale, IL

(continued)

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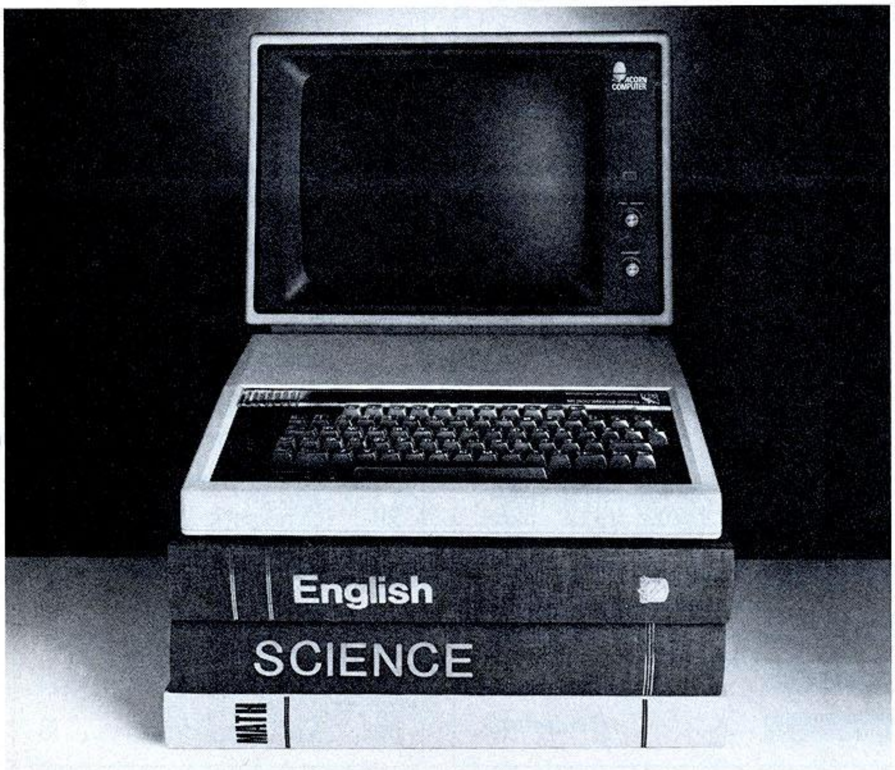
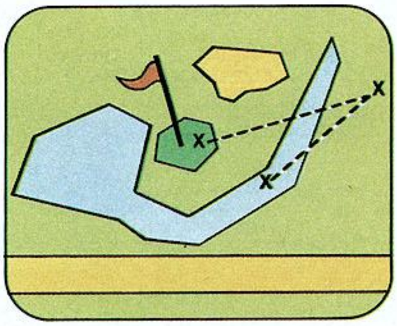


CIRCLE 10 ON READER SERVICE CARD

SOFTWARE SHOWCASE
(continued)



Players estimate the angle of a putt in Golf Classic & Compubar.

Golf Classic & Compubar

Computer: *Atari, Apple*
Topic: *Math*
Level: *Grades 5–8*

In a golf game, you must estimate the correct angle and length of the shot to reach the green. You do the same thing in *Golf Classic,* one of two programs in this package.

One to four students can play the simulated golf game. Once a player's ball reaches the green, the computer calculates and reports the number of putts the player took to make it.

The other program, *Compubar,* teaches students to solve problems, read graphs, and construct arithmetic expressions. By adding and subtracting pink bar pieces of varying lengths, players construct a bar to match one shown on the screen. When using a cassette, players must press "yes" at the end of each lesson for the program to work.

The programs come in an educational pack that includes an activity book, worksheets, additional games, scorecards, stickers, and a letter to parents.

As a supplementary activity to *Golf Classic,* students can set up their own golf course in class or on the playground. *Compubars* is excellent practice in problem solving.

Type of Software: Cassette for Atari 400; disk for others
Price: $34.95 cassette; $39.95 disk

Policy: $15 backup; 30-day refund
Source: Milliken Publishing Co., 1100 Research Blvd., St. Louis, MO 63132. ☐

Beth Lazerick
Computer Education Coordinator
Moreland School
Shaker Heights, OH

Spills & Fills

Computer: *VIC-20*
Topic: *Math, Science*
Level: *Grades 4–8*

The object is to fill, not spill. But spill you will, with this challenging game of proportion, coordination, and perception.

By moving a joystick, players operate a crane that moves a master beaker to a master faucet and fills it with water. The next step is to fill different sized beakers with water from the master beaker. When a beaker is filled to the proper level, the water in it will boil.

There are two levels of difficulty. The program measures both fills (the number of times it takes the master beaker to fill the other beakers) and spills (the amount of water spilled over from the beakers).

The graphics are great. The directions are weak, though, and it takes some thinking to get the program working smoothly. Students may have trouble at first, but they will improve with practice.

Spills & Fills is a great supplement to units on volume and spatial concepts in both elementary science and math.

Type of Software: Cartridge
Price: $29.95
Policy: 90-day, money-back guarantee
Source: Creative Software, 230 East Caribbean Dr., Sunnyvale, CA 94086; (408) 745-1655. ■

Nancy Watson
Assistant Professor
Burris School
Muncie, IN

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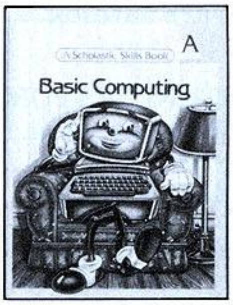

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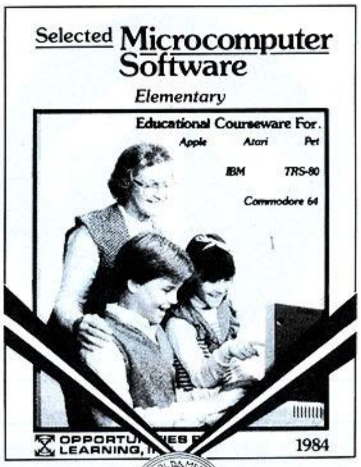
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READINESS REPRODUCIBLES

Worksheets on Programming

The next two pages are worksheets that show children how to write simple programs on the computer. Tear the worksheets out, run them off, and you'll have an instant lesson!

Tell students that the computer always does what it is told. It is just waiting for someone to give it instructions. A set of instructions for a computer is called a *program*. The words in a program must be written in a language that computers understand. One language is BASIC.

Display the following program:

```
10 PRINT "MY NAME IS DONNA."
20 END
```

Tell students this program is written in BASIC. Every statement in a BASIC program starts with a line number. The line numbers in this program are 10 and 20. Programmers usually number programs by tens. The statement after the line number (in this case, PRINT) tells the computer what to do. PRINT tells the computer to print the words that appear between the quotation marks that follow. In this example, the program tells the computer to print: MY NAME IS DONNA. END tells the computer that the program is done.

Type this program into your computer. Then type RUN and press ENTER or RETURN. Your monitor will show: MY NAME IS DONNA.

In the first worksheet, students are to read a short program and write what the computer would show on its screen if it ran the program. Answer: WHAT GETS WETTER THE MORE IT DRIES? A TOWEL!

In the second worksheet, each student writes a short program using his or her name, age, and favorite color. Answers will vary but here is a general form:

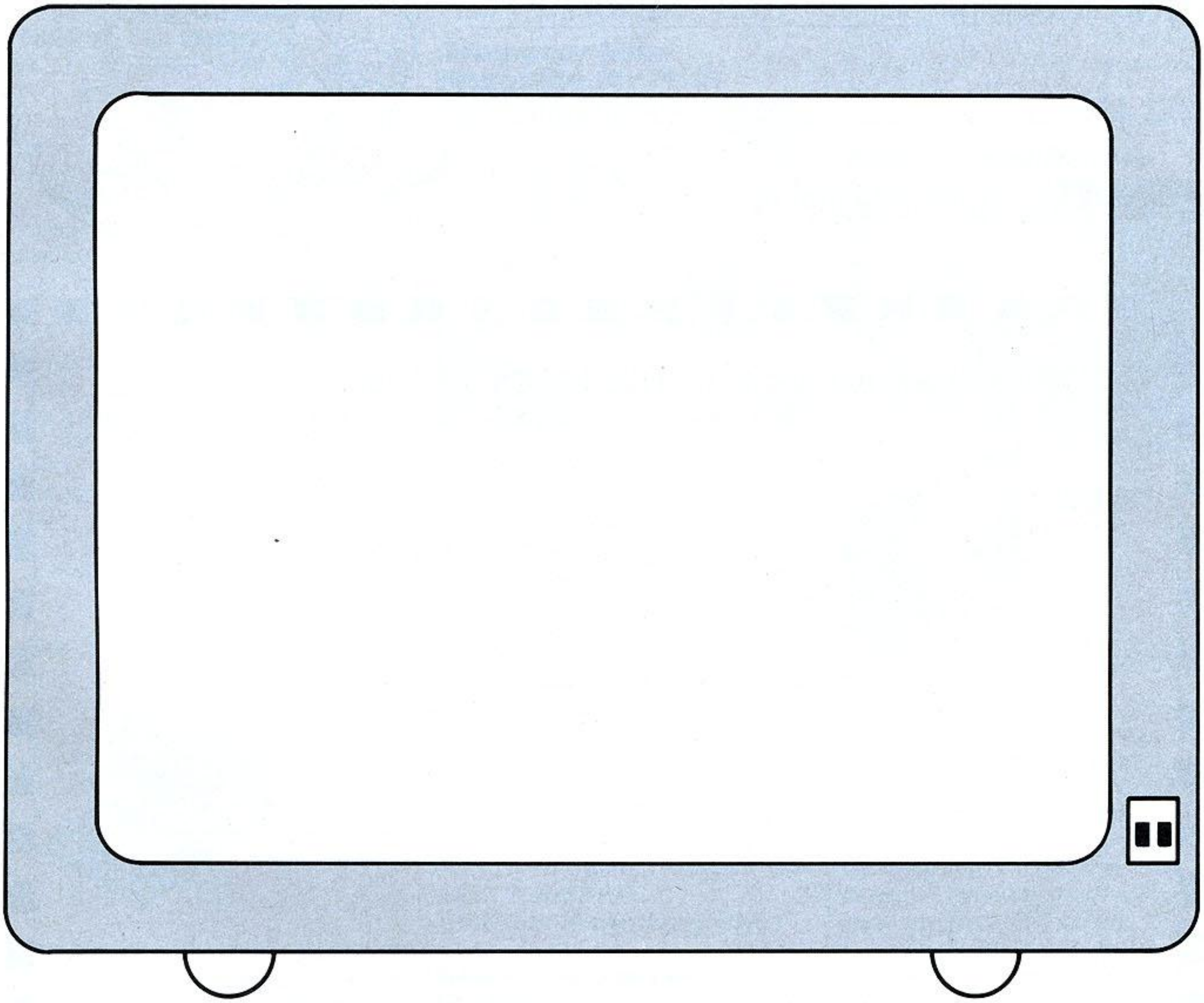
```
10 PRINT "MY NAME IS JASON."
20 PRINT "I AM EIGHT YEARS OLD."
30 PRINT "MY FAVORITE COLOR
   IS RED."
40 END
```

☐

NAME______________________________

What Would You See?

Print on the monitor screen what you would see
if you ran the program listed below.



```
NEW
10 PRINT "WHAT GETS WETTER"
20 PRINT  "THE  MORE IT DRIES?"
30 PRINT "A TOWEL!"
40 END
```

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NAME ______________________________

Write a Program

A. FILL IN THE BLANKS:

(1) MY NAME IS ______________________________.

(2) I AM _________________________ YEARS OLD.

(3) MY FAVORITE COLOR IS __________________.

B. WRITE A PROGRAM FOR THE LINES ABOVE.

NEW

10 _______________ ____

20 _______________ ____

30 _______________ ____

40 _______________

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Theresa Anderko

TOOLS OF THE TRADE

New and Useful Computer Products

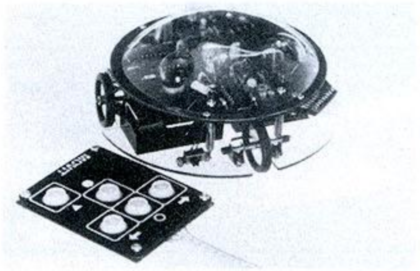
Macintosh Computer Makes Its Debut

Pictured above is Apple Computer's new computer, the Macintosh. The 20-pound Mac comes with 128K memory, a black-and-white monitor, and a detachable keyboard.

The Mac is designed primarily for college and business use, but two features make it particularly attractive for use with young students. First, the built-in disk drive does not eject the 3½" disk unless you exit properly from the system. Second, rather than type in commands, you use a mouse — a handheld device — to move the cursor to images, or icons, on the screen to instruct the computer.

Price: *$2,495.* Contact: *Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014; 800/538-9696.* ☐
(Circle 1 on Reader Service Card.)

An $80 Robot



The Memocon Crawler is a low-cost robot that can be programmed by connecting it to a computer with a parallel interface, or to a handheld control device called a "teach pendant." The robot can move forward, turn right or left, pause, sound a buzzer, light up, and repeat program procedures.

The three-wheeled robot comes in a kit and must be assembled. If you attach the Memocon Crawler to a teach pendant, it requires one nine-volt and two AA batteries.

Price: *$79.95.* Contact: *Stock Model Parts, 54 South Denton Ave., New Hyde Park, NY 11040; 516/328-3333.* ☐
(Circle 2 on Reader Service Card.)

Computer Mini-Magazine for Kids

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COMPUTERS—AN IMPORTANT TOOL FOR THE AIRLINES

A new mini-magazine, *Bits 'n Bytes Gazette,* introduces elementary and junior high students to basic computer concepts, such as the binary system and programming. The magazine also demonstrates computer use in society, through articles on computer careers, computer history, and computer technology. Written by Rachelle Heller and C. Dianne Martin, the magazines can be used alone or in conjunction with their text, *Bits 'n Bytes About Computing.*

Price: *$10 for a 10-issue subscription.* Contact: *Computer Science Press, Inc., 11 Taft Court, Rockville, MD 20850; 301/251-9050.* ☐
(Circle 3 on Reader Service Card.)

Book and Software Combo

Rainbow Quest is the first in a series of packages, published by Wayne Green Books, that combines fiction books and software for young readers. Using the book, children read the adventures of two heroic characters. Supplementary software enables kids to join in the adventures along the way. *Rainbow Quest* contains 25 programs on the software, including arcade-like games, word and number puzzles, and logic tests.

Packages are available for the Commodore 64 and the TRS-80 Color Computer. They will be available soon for the Apple and the IBM PCjr.

Price: *$24.97.* Contact: *Wayne Green Publications Group, Peterborough, NH 03458; 603/924-9471.* ☐
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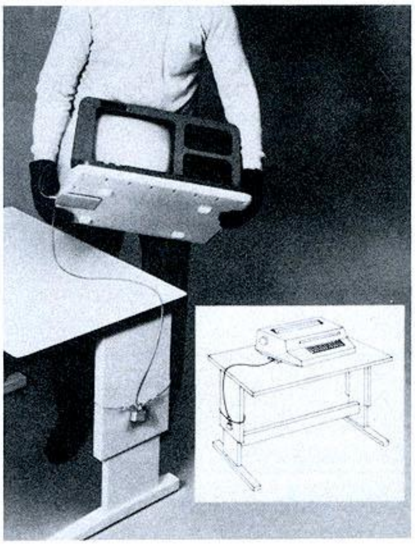
Theft Guard Device



Theft Guard is a simple device that will help protect your computer from theft and vandalism, while still leaving it completely mobile and accessible.

To install Theft Guard, affix its adhesive-backed plate to the base of the computer. The security cable attached to the plate wraps around almost any piece of furniture. A padlock is included to lock the cable in place. This device does not anchor the equipment to one spot permanently, but allows it to be unlocked and moved to other locations.

Price: *$30.* Contact: *Computerized Manufacturing Consultants, 106 N. Wilmot, Deerfield, IL 60015; 312/940-0010.* ■
(Circle 4 on Reader Service Card.)

COMMAND CONVERSION CHART

Some of the articles in this issue of Teaching and Computers contain program listings specific to one microcomputer brand. Use this conversion chart to modify programs for use on other brands of microcomputers. For more details on how to use specific commands, refer to your user's manual.

BATTERS UP FOR BASEBALL MATH: *Play Ball* and *Batting Average*, page 20 (Apple)

Machine	Lines	Conversion
Atari	1	Add this line: 1 DIM N$(30)
	10, 260	Change HOME to PRINT CHR$(125)
Commodore	10, 260	Change HOME to PRINT CHR$(147)
Radio Shack	10, 260	Change HOME to CLS
	140	Change to X = RND(20)
TI	10, 260	Change HOME to CALL CLEAR
	140	Change to X = INT(20*RND) + 1
	90, 130	Put commands on separate lines: 90 FOR S = 1 TO 500 95 NEXT 130 FOR D = 1 TO 1000 135 NEXT

PROGRAM OF THE MONTH: *World Ambassador*, page 43 (Commodore 64)

Machine	Lines	Conversion
Apple	100, 200, 320, 430, 710	Change PRINT CHR$(147) to HOME
Atari	1, 2, 3, 4	Add these lines: 1 DIM N$(25), P$(10), UM$(2), UT$(11) 2 DIM H$(2), M$(2), T$(5), Z$(1) 3 DIM T1$(11), LH$(2), LX$(5), LT$(11) 4 DIM A$(3)
	100, 200, 320, 430, 710	Change CHR$(147) to CHR$(125)
	310	Change to 310 H$ = STR$(LX): UT$ = H$:UT$(LEN(UT$) + 1) = ":":UT$(LEN(UT$) + 1) = M$:UT$(LEN(UT$) + 1 = T$
Commodore	VIC-20 users should limit screen text to 22 characters per line. Also, you may need additional memory space to expand the program on a VIC-20.	
Radio Shack	100, 200, 320, 430, 710	Change PRINT CHR$(147) to CLS
	10, 40, 190, 420	Change PRESS RETURN to PRESS ENTER
	1	Add this line: 1 CLEAR 300

Editor's Note: The TRS-80 Model III displays 64 characters per line. You may want to include more text in the print statements.

TI	100, 200, 320, 430, 710	Change PRINT CHR$(147) to CALL CLEAR
	10, 40, 190, 420	Change PRESS RETURN to PRESS ENTER
		Put commands on separate lines. For example: 10 PRINT "TYPE...ENTER." 15 INPUT N$

Editor's Note: Because TI BASIC accommodates only one command per line, conversions may be difficult for beginners. Novices are advised to seek help from a local TI users group or computer consultant.

KID'S PAGE: *April Showers*, page 37 (LCSI Logo)

Machine	Procedure	Conversion
MIT Logo	RAIN	Insert RANDOMIZE between TO RAIN and ST
TI Logo	RAIN	Change SETHEADING to SH

LEARNING CENTER TASK CARDS 25—28, pages 39 and 41 (all but Atari and TI)

Machine	Lines	Conversion
Atari	1	Add the following lines. Card 25: 1 DIM F$(20), M$(2), L$(20) Card 26: 1 DIM A$(20), B$(20), C$(20) Card 27: 1 DIM F$(20), A$(20), S$(30) Card 28: 1 DIM N$(20), L$(30), T$(30)

Editor's Note: On card #27, delete the last paragraph of the instructions.

TI	10, 20, 30	On all cards, put commands on separate lines. For example, card 25 reads: 10 PRINT "WHAT...NAME?" 15 INPUT F$ 20 PRINT "WHAT...NAME?" 25 INPUT M$ 30 PRINT "WHAT...NAME?" 35 INPUT L$

MICRO IDEAS: *Grade Averaging Program*, page 48 (Apple)

Machine	Line	Conversion
Atari	10	Change HOME to PRINT CHR$(125)
Commodore	10	Change HOME to PRINT CHR$(147)
Radio Shack	10	Change HOME to CLS
TI	10	Change HOME to CALL CLEAR

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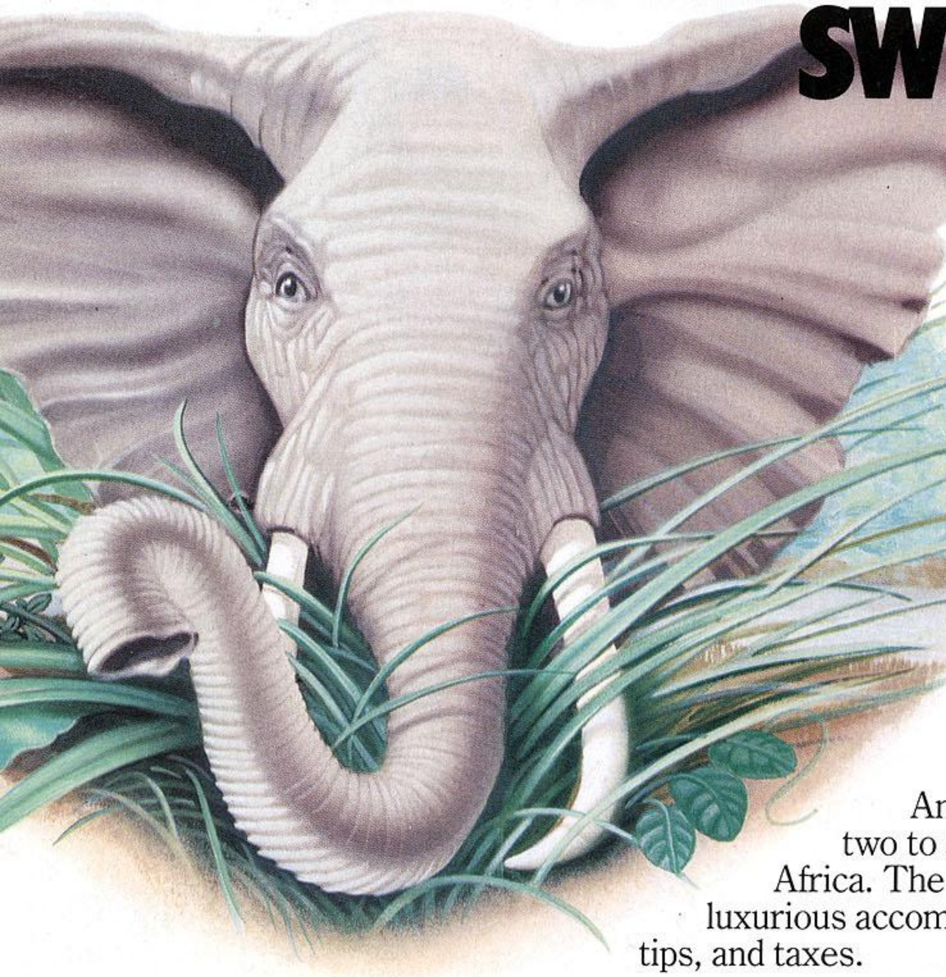

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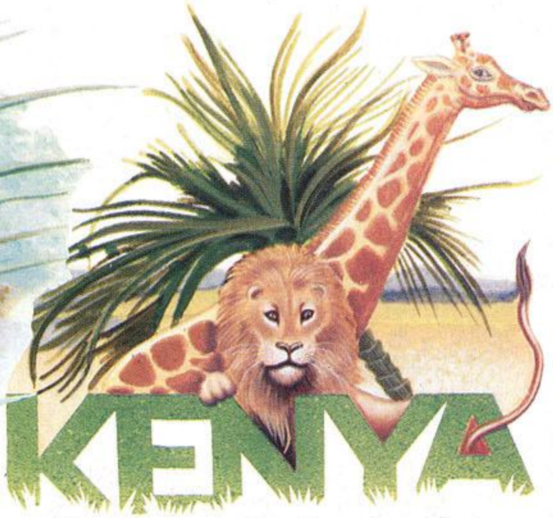

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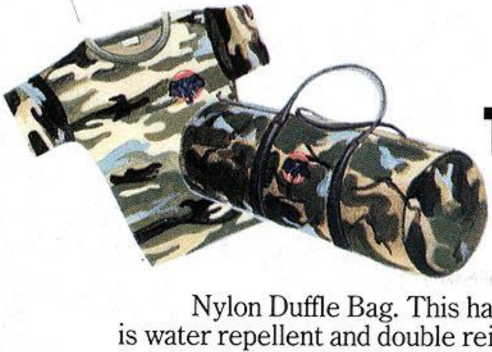

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The following pages are missing:
Calendar and Poster
pages 33-36

If you would like to contribute missing pages or issues,
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Thank you!
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